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# THE JOURNAL

OF THE

## American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 75, No. 14 | 535 North Dearborn Street, CHICAGO, ILL. | OCTOBER 2, 1920

## CONTENTS AND DIGEST

**Protein Sensitization in Eczema of Adults. Howard Fox, M.D., and J. Edgar Fisher, M.D., New York...907**

Review of the work of investigators that have used cutaneous inoculations of various proteins to study the problem of protein sensitization as a cause of eczema. Variations from the technic of Walker in the authors' tests. Results of the authors' investigations. Result of treatment by modified diet. Uncertainty of the value of the tests.

Discussed by Drs. Stokes, Highman and Walker.

**The Value of Prophylaxis Against Venereal Diseases. Joseph Earle Moore, M.D., Baltimore .....911**

The situation in Paris during the war. The provision of prophylactic stations. Iron-clad method of administering the treatment. System of records of treatments. Figures showing efficacy of prophylaxis.

**Development of the Bactericidal Power of Whole Blood and Antibodies in Serum. J. H. Black, M.D.; Kenneth Fowler, M.D., and Paul Pierce, A.B., Dallas, Texas .....915**

New avenue of approach to some phases of immunology. Plan of the authors' experiments. Results of the experiments demonstrated graphically.

Discussed by Dr. Davis.

**The Segregation of Pneumonia. Thomas S. Southworth, M.D., New York...919**

Impetus given by the war to the study of means for the care and protection of children. Complexities of pneumonia. Infectiousness of pneumonia. Measles-pneumonia occurring in groups. Need of segregation of pneumonia patients.

**Lactic Acid Milk. Dewitt H. Sherman, M.D., and Harry R. Lohnes, M.D., Buffalo .....921**

Reasons for variations in lactic acid milk. Effect of lactic acid milk on digestion. Difference between lactic acid milk and ordinary sour milk. Two kinds of lactic acid milk used by the authors. Two simple methods for securing acidity and keeping it. Effect of lactic acid milk on infants.

**Diagnosis of Chronic Intra-Ocular Tuberculosis. H. H. Stark, M.D., El Paso, Texas .....923**

A review of the disease. The healing process in tuberculosis. Possibility of distributing the infection to other parts of the body. General character of all tuberculosis. Certain noticeable changes in intra-ocular tuberculosis. Tuberculin diagnostic tests. Four different classes of patients. Diagnostic value of this method. Cause of failure to secure results in suspected tuberculous cases by the administration of tuberculin.

Discussed by Drs. Finnoff, Parker, Jackson, Gradle, Woods, Derby and Stark.

**Ethylhydrocuprein in Diseases of the Eye. Arthur J. Bedell, M.D., Albany, N. Y. .....928**

Composition of ethylhydrocuprein. Method of use. Experiments to determine the cause of failures that have been reported. Its use in various affections.

Discussed by Drs. Gradle, Ellett, Patton, Zentmayer, Taylor, Stark, Francis, Finnoff, Greenwood and Bedell.

**Epilepsy and Certain Types of Epileptiform Attacks. Daniel D. V. Stuart, Jr., M.D., Washington, D. C.....932**

(Continued on next page)

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October, 3, 1917, authorized on June 14, 1918. Copyright, 1920, by the American Medical Association

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See Page 3

## CONTENTS AND DIGEST—Concluded


Outline of the present-day views of the causation of epilepsy. Differentiation between the condition itself and the convulsive attacks. Necessity for accurate diagnosis.

**The Complement Fixation Reaction in Tuberculosis: Reporting Six Thousand Five Hundred Reactions. W. Warner Watkins, M.D., and Clarence N. Boynton, M.A., Phoenix, Ariz..933**

General results in this series of complement fixation reactions for tuberculosis. The choice of antigen. The specificity of the reaction. Possible cross fixation in syphilitic and tuberculous serums. Clinical significance of the reaction.

Discussed by Drs. Burdick, Harris, Johns. Jones, Hall and Watkins.

**Venipuncture in the Treatment of Certain Diseases of the Skin: Its Value as an Occasional Adjuvant. Jerome Kingsbury, M.D., and Paul E. Bechet, M.D., New York.....937**

Prevalence of bloodletting among the ancients. Revival of bloodletting in the treatment of diseases of the skin. Use of chrysarobin ointment in conjunction with bloodletting. The advisability of using a platinum needle of fairly large caliber.

Discussed by Drs. Stokes, Pusey, Ravogli, Cregor, Fox and Bechet.

**NEW AND NONOFFICIAL REMEDIES**

**Description of Articles Accepted by the Council on Pharmacy and Chemistry .....939**

Ichthynat.

**EDITORIALS**

**Methylene Blue Reduction Test in Study of Problems in Infection and Immunity.....940**

Its application for determining vitality of cells and of meningococci.

**The Growth of Population and the Food Supply.....940**

Limits of increase with present standards of living.

**Calcium Content of the Blood.....941**

Constancy of concentration regardless of variations in intake.

**The Antivivisection Initiative in California.....942**

Work for physicians in enlightening the voters.

**CURRENT COMMENT**

**A New Phase in the Serum Therapy of Epidemic Meningitis.....943**

Apparent existence of a meningococcus endotoxin.

**Mosquitoes and Bats.....943**

Dubious value of the latter as insect exterminators.

**Is Fat Absorbed Directly Into Blood Vessels?.....943**

Negative answer of latest experiments.

**The Fruits of Quackery.....944**

Two pictures.

**MEDICAL NEWS**

California .....944
Florida .....944
Georgia .....944
Illinois .....944
Indiana .....945
Maryland .....945
Massachusetts .....945
Michigan .....945
Missouri .....945
Nebraska .....945
New York .....946
North Carolina .....946
Ohio .....946
Pennsylvania .....946
Tennessee .....946
Texas .....946
Washington .....947
Canada .....947
General .....947
Latin America .....947
Foreign .....948
Correction .....948

**GOVERNMENT SERVICES 948**

**FOREIGN LETTERS 949**

London—Mexico City—Belgium—Berlin.

**MARRIAGES 953**

**DEATHS 953**

**PROPAGANDA FOR REFORM 954**

More Misbranded Venereal Nostrums.

**CORRESPONDENCE 955**

Immunization Against Plague: Experience of a Medical Missionary with Haffkine's Vaccine —Why Left Light for Reading Purposes?

**QUERIES AND MINOR NOTES 956**

"Intermittent Treatment with Antipyretics"—Alcohol, Arsphenamin and the Wassermann Test—Pronunciation of Salicylate.

**MEDICAL EDUCATION, REGISTRATION AND HOSPITAL SERVICE**

Coming Examinations — Montana April Examination—Indiana July Examination.....957

**BOOK NOTICES 957**

**MEDICOLEGAL**

Seller of Shaving Brush Not Liable for Anthrax — Evidence and Rules of Evidence in Fracture Case — Larger Award for Injuries Justified Now .....958

**SOCIETY PROCEEDINGS 958**

Coming Meetings.

**CURRENT MEDICAL LITERATURE**

**American Medical Journals**

Adenomyomas Containing Uterine Mucosa—Bone Transplantation—Gallbladder Disease—Open Pneumothorax — Blood Pressure in Prostatic Obstruction—Intracranial Approach to Chiasmal Lesions—Results of Operations for Inguinal Hernia.....959

Seventy Convulsions in Case of Eclampsia—Basal Metabolism in Thyroid Disease—Diphtheria Immunization—Unilateral Nephritis—Colon Malfusion .....960

Diagnosis of Anthrax — Fusiform Bacilli in Vincent's Angina — Iodin in Pituitary—Hematorespiratory Functions: Asphyxial Acidosis — Oxygen Deficiency and Blood Alkali—Oxygen Tension, Blood Alkali and Altitude—Determination of Blood Calcium—Determination of Acetone in Dilute Solutions—Determination of Acetone in Expired Air—Effect of Calcium Salts on Blood Calcium—Antiscorbutic Value of Honey—Carbohydrate Metabolism and Diabetes.....961

Water-Soluble Vitamins—Vitamin Content Measurement — Testing Coagulation Time of Blood—Use of Convalescent Serum in Influenza—Multiple Echinococcus Cysts—Full Term Extra-Uterine Pregnancy.....962

Malignant Kidney Tumors in Children—Treatment of Tuberculosis of Spine—Dressing for Fractured Clavicle—Spinal Bone Graft Operation for Lumbago—Lowering Diphtheria Mortality—Familial Trichinosis .....963

**Foreign Medical Journals**

Glandular Adipose Tissue — Mycelial Organisms in Actinomycosis — Standing Albuminuria—Quantity of Milk Nursed by Infants —Use of Vaccine in Influenza.....964

Demarcation of Feces in Infants—Tuberculous Typhobacillosis — Medical Treatment of Chronic Cholecystitis—Onset of General Paresis—Contagiousness of Epidemic Encephalitis—Phonendoscopy of Friction Sounds—Double Circle Suture for Cesarean Section—Subcutaneous Symphyseotomy in Argentina —The Bladder and Ureters with Uterine Cancer, etc.—Injury of the Ureter During Gynecologic Operations—Radiography of the Skin .....965

Roentgen-Ray Treatment of Lymphadenoma—Iron in Anemia—Proper Doses for Iron in Anemia, Chlorosis, etc. — Degeneration of Spinal Ganglions with Scleroderma — The Spinal Fluid in Tuberculous Meningitis — Pathogenesis of Endocrine Derangement — Electronic Reflexes—Stain for Malaria Parasite—Causes of Constipation—Obstruction of Common Bile Duct—The Cinematography of Development of the Embryo—Case of Recklinghausen's Disease .....966

Polycystic Ovaritis—Abderhalden's Test in the Diagnosis of Renal Tuberculosis — Lack of Rigidity of Abdominal Wall in Destructive Appendicitis—Cervicovaginal Fistulas—Disordered Heart Action in Children—Pathology of Disturbance from Fat in Infant Feeding—Flours in Infant Feeding—Edema in Infants with Spasmophilia—Bacteriologic Examination of Blood in Infants—Immunization Against Diphtheria.....967

The Fate of Children with Congenital Syphilis —Postmortem Pigmentation of the Skin—Studies on Small Intestine Through a Cecal Fistula—Experimental Research on Insufficiency of the Ileocecal Valve — Placenta Praevia—Demonstration of Hemin Crystals—Visual Disturbances Following Hot Baths—Crystal Filters in Roentgen-Ray Work—Diagnosis of Chronic Bartholinitis.....968

Dosage in Treatment of Recent Syphilis—The Management of Perforated Gastric Ulcer—Traction Sutures in Prostatectomy—Repair of Large Clavicle Defect—Calculus in Vagina —The Freund-Wertheim Carcinoma Operation—Puerperal Fever—Laceration of Intestine by External Trauma at End of Pregnancy .....969

Postoperative Intestinal Obstruction — Ocular Lesions Consecutive to Osteomyelitis of the Upper Jaw in Infants—Neo-Arsphenamin in Banti's Disease — Operative Treatment of Otitis with Scarlet Fever—Combined Treatment of Gastroptosis.....970

**TONICS AND SEDATIVES—BOOKS RECEIVED .....Adv. Page 20**



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# The Journal of the American Medical Association

**Published Under the Auspices of the Board of Trustees**

VOL. 75, No. 14 CHICAGO, ILLINOIS OCTOBER 2, 1920


## PROTEIN SENSITIZATION IN ECZEMA OF ADULTS *


HOWARD FOX, M.D.
AND
J. EDGAR FISHER, M.D.
NEW YORK


Among the many diseases of the skin whose etiology has long remained unsolved, eczema occupies a prominent place. The possibility of an anaphylactic origin of this disease was suggested by Fordyce [1] in 1911. Since then a number of investigators have used cutaneous inoculations of various proteins to study the problem of protein sensitization as a cause of eczema. Much of the work along these lines has been done by the pediatricians in eczema of infants and children. Schloss,[2] who was a pioneer in this work, concluded that "a number of cases of eczema will prove to be due to food allergy." Blackfan [3] found that twenty-two out of twenty-seven patients, mostly infants and children, gave evidence of susceptibility to proteins. Strickler and Goldberg [4] tested fifteen children suffering from eczema, by the intradermal method, using solutions of proteins which they had specially prepared. Five of their patients reacted positively and several gave weak positive or "suggestive" reactions. C. J. White [5] in a recent paper on the treatment of eczema in childhood, reported 66 per cent. of positive reactions in cases in which he used the food proteins prepared according to the method of Turnbull (quoted in White's report). In a series of sixteen cases in infants and children, Talbot [6] observed fourteen positive reactions to egg white and a smaller number of reactions to other proteins.

Previous to the publication of his paper on eczema in children, White [7] wrote a preliminary report on the anaphylactic phenomenon in eczema. He tested sixty-four patients with chronic eczema (mostly adults) by the cutaneous method with four substances, representing different types of foods. These were fat free milk, egg albumin, salt free butter and lactose or oatmeal water, the milk representing the food of children and the others albumins, fats and carbohydrates, respectively. In about 80 per cent. of his cases positive reactions to one or more of these substances were obtained. In a second communication, White [8] published observations on a series of 107 patients as a continuation of the same work. In these cases, however, he obtained 45 per cent. of positive reactions, as opposed to 80 per cent. in his first report. He concluded that "a goodly proportion of patients affected with chronic eczema show sensitization to the various types of foods." He regretted not having used pure proteins of various foods in his work, a condition that was remedied in his later report (quoted in the foregoing) on eczema in children.

Strickler [9] made tests in forty-six cases of eczema (mostly adults) with fifteen different proteins, prepared according to the method described in the paper of Strickler and Goldberg.[4] He used the intradermic test, injecting 0.1 c.c. of a solution of protein, and adopted the following factors as the standard for a positive test. In order of their appearance they were: persistence of the reaction for forty-eight hours, presence of a distinct papule, erythema and local tenderness. In twelve cases, or 26 per cent., the tests were entirely negative. Of the remaining patients, twenty-three, or 50 per cent., "were in greater or less degree benefited by changed diet as shown by the anaphylactic food test." In all of his cases, wherever possible, local treatment was withheld to observe the effect of diet on the eruption. In discussing the effects of the tests on certain skin diseases, Strickler concluded that "these reactions find their greatest value in eczema where the development of a strong reaction holds out great hope for an improvement or cure in the skin condition."

The optimistic opinions of White and particularly of Strickler, concerning the practical value of the protein sensitization tests in adults, do not appear to be shared by some of the pediatricians in the case of younger patients. John Howland, in discussing the paper of Schloss, said in regard to children: "Therapeutically there is a small number of cases that can be cured or very much improved, but there is a large number that at present cannot be improved." In regard to infants, Blackfan thinks that the removal of some or all of the animal proteins from the food is not successful. This is because it is impossible to keep them on such a diet for a long time without the danger of seriously affecting the nutrition and because there is a strong tendency for the eczema to relapse. Such a

* Read before the Section on Dermatology and Syphilology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Fordyce, J. A.: Infectious Eczematoid Dermatitis; Possible Influence of Anaphylaxis in Skin Reactions, J. Cutan. Dis. **29:** 129, 1911.
2. Schloss, O. M.: Allergy to Common Foods: A Preliminary Report, Tr. Am. Pediat. Soc. **27:** 62, 1915.
3. Blackfan, K. D.: Cutaneous Reaction from Proteins in Eczema, Am. J. Dis. Child. **11:** 441 (Jan. 22) 1916.
4. Strickler, A., and Goldberg, J. M.: Anaphylactic Food Reactions in Dermatology, J. A. M. A. **66:** 249, 1916.
5. White, C. J.: The Treatment of Eczema in Childhood, Boston M. and S. J. **178:** 5 (Jan. 3) 1918.
6. Talbot, F. B.: Eczema in Childhood, Med. Clin. N. Am. 985 (Jan.) 1918.
7. White, C. J.: The Anaphylactic Phenomenon in Eczema and the Recent Progress in Our Knowledge of the Etiology and Treatment of the Disease (A Preliminary Report), J. Cutan. Dis. **34:** 57 (Feb.) 1916.
8. White, C. J.: Two Modern Methods to be Employed in the Treatment of Chronic Eczema, J. A. M. A. **68:** 81 (Jan. 13), 1917.
9. Strickler, A.: Anaphylactic Food Reactions in Skin Diseases, with Specific References to Eczema, New York M. J. **104:** 198 (July 29) 1916.


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method of treatment, however, he thinks, in some older children and adults effects great improvement.

I. Chandler Walker,[10] in one of his many valuable studies on protein sensitization, has recently reported some interesting cases of eczema "produced by proteins which are not foods, but with which persons come in contact throughout life, and which so far have not been recognized as causes of these conditions." Of Walker's four cases of eczema, two were caused by the proteins of horse dandruff, and one each by the proteins of timothy and ragweed pollen, respectively. The first two cases represented sensitization to horse dandruff through two different channels, one by natural exposure to horses and the other by subcutaneous injection of the protein. Case 1 occurred in a boy of 11, who had suffered from asthma and eczema since his first year. Riding behind horses caused attacks of asthma. He reacted positively to proteins of horse dandruff and ragweed pollen. Treatment by desensitizing injections showed rapid improvement in both asthma and eczema. Case 2 occurred in a girl of 15 who had suffered from asthma for nine years and who reacted positively to horse dandruff protein and to ragweed pollen. She was given desensitizing injections of horse dandruff, and after a few injections an eczema appeared which resisted all treatment. The injections were then stopped, and at the end of two weeks the eczema had practically disappeared.

The technic we have used in our work was that of Walker,[11] who described it as follows:

> A small number of cuts, each about an eighth of an inch long, are made on the flexor surfaces of the forearm. These cuts are made with a sharp scalpel, but are not deep enough to draw blood, although they do penetrate the skin. On each cut is placed a protein and to it is added a drop of tenth normal sodium hydroxid solution to dissolve the protein and to permit of its rapid absorption. At the end of half an hour, the proteins are washed off and the reactions are noted, always comparing the inoculated cuts with normal controls on which no protein was placed. A positive reaction consists of a raised, white elevation or urticarial wheal surrounding the cut. The smallest reaction that we call positive must measure 0.5 cm. in diameter. All larger reactions are noted by a series of plus marks and any smaller reaction is called doubtful.

In performing our tests we have made a few slight variations from the technic of Walker. In some of our women patients the tests have been made on the abdomen instead of the forearm in order to avoid the slight disfigurement, which, however, disappears in a week or two, and is never permanent. We have also found it convenient to place the drop of alkali on the skin, next, to mix a small amount of protein, using a fresh toothpick for each inoculation, and then make a small scarification. Several controls have been made in each case.

We have not tried the so-called intradermal method recommended by Strickler and Goldberg. A comparative study of the relative value of the cutaneous and intracutaneous tests in cases of asthma and hay-fever was made by Walker and Adkinson,[12] who came to the following conclusions:

> The skin test is specific; it separates closely related proteins; it is sufficiently sensitive and yet not too sensitive; it is a safe index to proper treatment; it is easy to do and it does not inconvenience the patient.

On the other hand, they concluded that:

> The intradermal test is much less specific; it does not always separate closely related proteins; therefore it may be nonspecific; it is much too sensitive; therefore it is not an index to proper treatment; it is much more difficult to do and causes the patient considerable annoyance and discomfort, therefore it is not as practical when many proteins must be tested.

Blackfan, in speaking of Strickler and Goldberg's statement that a reaction with the intradermal method is to be considered positive only when an erythema remains around the point of inoculation for forty-eight hours, wrote: "There does not seem to be justification

TABLE 1.—CASES OF ECZEMA WITH NEGATIVE REACTIONS

| Number | Sex* | Age | Duration | Location | Type | No. of Proteins Tested |
|---|---|---|---|---|---|---|
| 1 D. M. | ♂ | 30 | 1 yr. | Back of neck, forearms and buttocks | Papulo-squamous | 24 |
| 2 E. C. | ♂ | 90 | 4 wks. | Generalized, especially on legs and buttocks | Erythemato-squamous | 20 |
| 3 T. H. | ♂ | 12 | 18 mos. | Feet and ankles.... | Papulo-squamous | 21 |
| 4 J. D. | ♀ | 45 | 17 mos. | Scalp..... | Squamous | 19 |
| 5 J. T. | ♂ | 67 | 6 wks. | Hands, wrists, cubital spaces and thighs | Papulo-squamous | 18 |
| 6 A. S. | ♀ | 35 | 2 mos. | Eyelids and forearms | Erythematous | 28 |
| 7 J. P. | ♀ | 40 | 10 mos. | Behind and above ears and in axillae | Squamous | 20 |
| 8 W. C. | ♂ | 22 | 4 mos. | Hands and feet.... | Vesico-papular | 30 |
| 9 J. S. | ♂ | 45 | 2 yrs. | Perineum..... | Papulo-squamous | 18 |
| 10 M. S. | ♀ | 52 | 6 mos. | Eyes and nose..... | Erythematous | 20 |
| 11 W. W. | ♂ | 49 | 7 yrs. | Face, arms and legs | Erythematous | 29 |
| 12 A. H. | ♂ | 15 | 3 wks. | Forehead and cheeks | Vesico-squamous | 25 |
| 13 M. P. | ♂ | 16 | 6 yrs. | Forehead and cheeks | Vesicular | 21 |
| 14 F. F. | ♂ | 39 | 4 mos. | Sacral region, thighs and about ears | Papular | 23 |
| 15 L. W. | ♂ | 55 | 3 yrs. | Legs and forearms | Vesiculo-squamous | 32 |
| 16 J. R. | ♂ | 22 | 1 mo. | Scalp..... | Papular | 26 |
| 17 R. M. | ♂ | 41 | Infancy | Face, hands and legs | Papulo-squamous | 33 |
| 18 W. M. | ♂ | 22 | 14 mos. | Scalp, face, chest and back | Squamous | 32 |
| 19 J. G. | ♀ | 50 | 3 wks. | Generalized on trunk, arms and legs | Erythemato-papular | 23 |
| 20 C. C. | ♀ | 30 | 3 mos. | Fingers..... | Papulo-squamous | 29 |
| 21 J. T. | ♀ | 40 | 6 mos. | Hands..... | Papulo-squamous | 33 |
| 22 J. M. | ♂ | 26 | 14 mos. | Hands and arms... | Papulo-squamous | 26 |
| 23 J. S. | ♂ | 62 | 2 wks. | Hands, arms and legs | Vesiculo-papular | 19 |
| 24 H. L. | ♂ | 35 | 15 yrs. | Face and neck..... | Erythemato-squamous | 20 |
| 25 J. G. | ♂ | 54 | 3 yrs. | Forehead, nose and cheeks | Squamous | 23 |
| 26 J. S. | ♂ | 43 | 7 yrs. | Back, axillae and arms | Papular | 27 |
| 27 S. B. | ♂ | 69 | 15 yrs. | Generalized..... | Erythemato-squamous | 23 |
| 28 M. V. | ♀ | 45 | 1 yr. | Neck..... | Squamous | 35 |
| 29 H. B. | ♂ | 24 | 6 mos. | Arms, forearms and hands | Squamous | 20 |
| 30 R. M. | ♂ | 24 | 2 mos. | Generalized, chiefly on extremities | Papulo-squamous | 30 |
| 31 A. L. | ♀ | 40 | 2 mos. | Backs of hands, wrists and cubital spaces | Papulo-erythematous | 25 |
| 32 G. O'C. | ♂ | 16 | 1 yr. | Hands..... | Vesicular | 31 |
| 33 I. C. | ♀ | 49 | 3 wks. | Generalized, chiefly extremities | Erythemato-papular | 23 |
| 34 G. C. | ♀ | 35 | 18 mos. | Hands and feet.... | Squamous | 37 |
| 35 M. S. | ♀ | 17 | 5 mos. | Face, backs of hands and cubital spaces | Erythemato-papular | 13 |
| 36 H. L. | ♂ | 28 | 2 yrs. | Backs of hands and wrists | Squamous | 31 |
| 37 F. H. | ♀ | 22 | 3 mos. | Face and chest..... | Papulo-vesicular | 26 |
| 38 D. B. | ♀ | 30 | 1 yr. | Face..... | Erythemato-papular | 27 |
| 39 P. V. | ♂ | 29 | 1 mo. | Scrotum and penis | Erythemato-squamous | 29 |
| 40 C. H. | ♀ | 45 | 3 mos. | Extremities..... | Papular | 22 |
| 41 T. P. | ♂ | 65 | 8 mos. | Arms and legs..... | Erythemato-papular | 20 |

* In this column male is indicated by ♂ and female by ♀.

10. Walker, I. C.: Causation of Eczema, Urticaria and Angioneurotic Edema by Proteins Other than Those Derived from Food, J. A. M. A. **70**: 897 (March 30) 1918.
11. Walker, I. C.: Studies on the Cause and the Treatment of Bronchial Asthma, J. A. M. A. **69**: 363 (Aug. 4) 1917.
12. Walker, I. C., and Adkinson, J.: A Comparison Between the Cutaneous and the Intradermal Tests in the Sensitization of Asthmatic and Hay Fever Patients, J. M. Res. **37**: 287 (Nov.) 1917.

for the establishment of such a criterion." He quoted the case of Smith in which there was a violent local reaction after applying buckwheat to the denuded surface, the reaction persisting only a few hours. He also quoted the case of Schloss, in which the patient, "with all clinical and laboratory evidences of hypersensitiveness to several proteins, reacted locally but only temporarily."

The cutaneous method of performing the sensitization tests is a simple procedure after a little experience and causes the patient no appreciable pain or inconvenience. In a few of our cases the skin was so irritable that the reactions could not be read and the results were not included in our report. In two cases delayed reactions were noted by the patients about twelve hours after the tests had been performed; but as they were not seen by us they have also been omitted from our table.

Our work has been almost entirely confined to eczema occurring in adults. Two of our patients were boys of 12 and 13, and two others were 15 and 16 years old. The ages of the remaining patients varied from 17 to 90 years. We have tested our patients solely by the cutaneous method, using the ordinary commercial proteins. Our cases included various types of subacute and chronic eczema. Special care was taken to exclude cases of trade eczema or others due to some known local irritant. We also tried to exclude cases that might have had a parasitic origin, such as the epidermophyton or ringworm fungus, as well as so-called cases of infectious eczematoid dermatitis.

Of the sixty patients tested, forty-one gave entirely negative reactions, the number of proteins used in each case varying from thirteen to thirty-seven (an average of twenty-four). The attempt was always made to test the foods that were ordinarily eaten by each individual patient. There were nineteen patients that reacted positively to one or more proteins. Each individual was tested with fifteen to forty-four proteins (an average of twenty-five). Five patients reacted to celery, five to cheese, four to bean and turnip, three to cabbage, lettuce and sweet potato; two to carrot, cauliflower, oat and potato, and one each to asparagus, beet, coffee, corn, grapefruit, onion, orange, oyster, plum, pork, rye, tomato and wheat. Following Walker's technic, we considered a + reaction to be a wheal 0.5 cm. in diameter; a + +, 1 cm.; + + +, 1.5 cm., etc. No account was taken of the accompanying erythema. On this basis we observed in one patient (Case 11, Table 2) five reactions of + + + + intensity (wheal of 2 cm.), namely, to bean, carrot, celery, lettuce and turnip. One patient gave a + + + reaction to oyster, and in eight patients + + reactions were given to cabbage, carrot, cauliflower, celery, lettuce, sweet potato and turnip. The remainder of the foods mentioned above caused a + reaction. We were struck by the fact that the great majority of reactions, and especially all of the severe ones (except that to oyster), were given by vegetables.

In some of our cases we tested with proteins (other than foods) of epidermal origin. Of these, twenty-two patients were tested with the protein of horse dandruff, to which three gave a doubtful or ± reaction. Of thirteen patients tested with the protein of dog hair, one reacted positively, while eight patients, tested for chicken feathers all gave negative reactions.

The practical results of our work were unfortunately not very satisfactory. A large number of cases were of private patients, and it was not feasible to withhold treatment for several weeks to observe the effect of a diet, modified according to the results of the tests. This has been somewhat compensated by the inclusion of Dr. Ramirez's cases which follow. We also regret having failed to obtain information from our patients regarding a personal and family history of asthma, as this condition is claimed to be associated at times with eczema. Some of the material was obtained from the dermatologic department of the Harlem Hospital, while three patients were very kindly referred by Dr. Boleslaw Lapowski from the Good Samaritan Hospital.

Our most favorable result of treatment by modified diet was in the case of a man, aged 55, who had suffered for eight years from a severe eczema of the backs of the hands and wrists (Case 2, Table 2). He had been a great eater of cabbage and sauerkraut, and gave a + + reaction to cabbage. After omitting this article of food from his diet, he showed a most striking improvement at the end of a week. As he expressed it, the eruption was "200 per cent. better." On eating cabbage one month later, at our request, the eczema again became worse. The patient also recalled that during the previous year after a hearty meal of

TABLE 2.—CASES OF ECZEMA WITH POSITIVE REACTIONS

| Number | Sex* | Age | Duration | Location | Type | Number of Proteins Tested | Positive Reactions |
|---|---|---|---|---|---|---|---|
| 1 A. T. | ♀ | 27 | 2 mos. | Neck, arms and legs | Papular | 32 | Oat +, onion + |
| 2 F. E. | ♂ | 55 | 8 yrs. | Hands and wrists | Squamous | 25 | Cabbage ++, lettuce ++, bean +, coffee + |
| 3 W. B. | ♂ | 58 | 1 yr. | Face, neck, shoulders and elbows | Erythematosquamous | 17 | Cabbage +, beet +, celery + |
| 4 J. H. | ♂ | 31 | 3 wks. | Face and neck | Papulovesicular | 30 | Oyster +++, cabbage +, oat +, plum + |
| 5 J. H. | ♂ | 13 | Infancy | Generalized, face, trunk and extremities | Papulosquamous | 20 | Orange +, tomato + |
| 6 B. M. | ♂ | 63 | 4 wks. | Face and neck | Erythematous | 19 | Celery ++ |
| 7 M. P. | ♀ | 35 | 3 mos. | Eyelids | Erythematous | 18 | Cheese + |
| 8 E. R. | ♂ | 23 | 4 mos. | Face and popliteal spaces | Erythematosquamous | 35 | Carrot ++, cauliflower ++ |
| 9 C. W. | ♂ | 16 | Infancy | Forehead and left temple | Vesicopustular | 44 | Corn + |
| 10 L. V. | ♂ | 29 | 7 mos. | Hands | Squamous | 19 | Cheese + |
| 11 S. C. | ♂ | 41 | 10 days | Face and fingers | Erythematous | 32 | Bean ++++, carrot ++++, celery ++++, lettuce ++++, turnip ++++, asparagus + |
| 12 R. H | ♀ | 28 | 5 wks. | Wrist, neck and shoulders | Erythematosquamous | 34 | Bean +, cauliflower +, celery +, lettuce +, sweet potato + |
| 13 G. D. | ♂ | 23 | 5 mos. | Face and elbows | Vesicopapular | 20 | Pork +, turnip + |
| 14 F. B. | ♂ | 19 | 18 mos. | Thighs | Vesicopapular | 26 | Sweet potato ++, dog hair + |
| 15 F. Z. | ♀ | 25 | 2 yrs. | Face, neck and chest | Erythematopapular | 24 | Sweet potato ++, bean +, celery +, potato +, wheat + |
| 16 J. M. | ♂ | 22 | 4 wks. | Face, neck and legs | Erythematosquamous | 19 | Cheese + |
| 17 M. D. | ♀ | 67 | 6 wks. | Chest | Squamous | 15 | Turnip ++, cheese +, potato + |
| 18 A. S. | ♂ | 29 | 2 yrs. | Hands | Vesiculosquamous | 20 | Rye + |
| 19 T. K. | ♂ | 37 | 3 mos. | Feet | Erythematosquamous | 32 | Cheese +, grapefruit +, turnip + |

* In this column male is indicated by ♂ and female by ♀.

cabbage, his hands, within half an hour, became distinctly redder, a condition which was remarked on by his daughter.

Several cases (5, 8, 11 and 13, Table 2) appeared to throw considerable doubt on the practical value of the tests. None of these persons improved when the diet was regulated by omitting the foods that had caused reactions. In fact, the eruption in one case became so severe that the patient was treated for six weeks in a hospital. All of the other three later improved under roentgen-ray treatment and did not become worse when they again (at our request) ate the foods that had given positive reactions.

Through the kindness of Dr. M. A. Ramirez, who has had a very extensive experience with the protein skin tests in asthma and hay-fever, we are able to quote his results (unpublished) in eczema of adults. Of the sixty-six cases in which the test was applied by Ramirez in persons of 15 years or older, twenty (or 30 per cent.) gave positive reactions, and forty-six negative cutaneous reactions. In all of the positive cases the reaction was to more than one protein. The foods that caused positive reactions in the order of frequency were: corn, rice, wheat, egg-white, potato, celery, pork, lettuce, cabbage, beef, rye, fish, crab, lobster and milk. None of his patients received any treatment whatever, but were simply put on a diet modified according to the results of the tests. Of the twenty patients with positive reactions, six were cured, nine improved and five unimproved. In the cases of cure and improvement, the improvement was noticed in the first week. In the cases of apparent cure, there were no recurrences within six months, and in some for one year. Tests performed six months later in the cured patients were negative.

One of Ramirez's most striking results occurred in a woman, aged 28, who had suffered for a year from an eczema of the hands. She reacted + + to banana and + to celery. She had previously eaten bananas every morning for breakfast. After she omitted this food from her diet the eczema cleared up at the end of a week, to return again in two weeks when she again ate bananas. She then stopped eating bananas, and again the eruption disappeared and had not returned at the end of one year. Ramirez expresses the opinion that only a comparatively small percentage of eczemas are anaphylactic, but that the ones associated with asthma or hay-fever are generally of this type.

## CONCLUSIONS

It seems difficult to draw definite conclusions at present regarding the true value of the protein skin tests in eczema of adults. Most of the published reports with which we are familiar have dealt with eczema of infants or children.

In his experiments in eczema of adults, White used four types of foods that were not pure proteins. He performed the tests by the cutaneous method and ultimately concluded that the commercial proteins (which we used) were unreliable. Strickler in his work used a limited number of proteins and tested his patients by intracutaneous injections of solutions of proteins.

In our work (similar to that of Ramirez) we have tested each patient by the cutaneous method with a goodly number of the ordinary commercial proteins. The results of these different methods have varied greatly, and we feel that a good deal of investigation remains to be done to determine the real value of the tests. It would appear to us that they will ultimately prove to be of therapeutic assistance in a small proportion of cases of eczema of adults.

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## ABSTRACT OF DISCUSSION

DR. JOHN H. STOKES, Rochester, Minn.: The results of cutaneous sensitization tests are occasionally spectacular. On the other hand, they are much of the time indeterminate or highly confusing. Technical difficulties and group reactions are responsible for a certain amount of difficulty. Too deep scarification, in particular, may yield untrustworthy results. We should recall also that there are in all probability two types of sensitization phenomena, one of them manifesting itself in cutaneous allergy and systemic anaphylaxis. It has recently been shown that the one does not necessarily predicate the other. It is well to recall, too, that allergy producing substances introduced by way of the gastrointestinal tract need not necessarily give rise to identical reactions with those produced by parenteral injection.

DR. WALTER J. HIGHMAN, New York: My experience with the method has not been in connection with that group of diseases which is still called eczema in dermatologic literature, but if this condition can be caused by protein sensitization, it is very likely that the principles underlying its mechanism are identical with those underlying that of another group of diseases, particularly urticaria and allied conditions. The glowing testimonials endorsing this method as a diagnostic means are, perhaps, not entirely justified. In using a substance of this sort, the first thing that strikes one is that the method is not going to supply the etiology of a great number of diseases, nor is it going to supply a correct therapy, and yet there is a considerable residuum of cases in which the method may be of great value both diagnostically and therapeutically. The second point is that a man may be sensitive to sweets, fat and rice, and it is very difficult to understand how three such substances can be the underlying cause of a given disease, whether it be urticaria or eczema. A great many investigators, notably Schloss and his collaborators, have found out that there are group similarities in various foods, and it is likely that if allergy in the skin can be demonstrated to one member of a group, related members may be responsible for the causation of the disease. The chemical similarity of widely different products is a matter to be considered in connection with a great many contradictory reactions that are found. I remember one patient who reacted to numerous proteins most intensively, most of all to carrots; when carrots were removed the urticaria stopped. With all the complicated problems that enter into the study of anaphylaxis and protein sensitization we cannot yet talk sensibly about the phenomenon. The whole question is in a state of flux. We do not even know positively whether cutaneous reactions are an anaphylactic phenomenon; or how the patient becomes sensitized and why. Until these facts are more definitely established I do not think we can advocate the method as one that is valuable for the general use of physicians, although those of us who pursue it approach it with a little more enthusiasm than is expressed in my spoken words.

DR. NORMAN WALKER, Edinburgh, Scotland: It is most interesting to find out that doctrines I had been ignorantly advocating have a scientific basis. My colleagues at home chaff me about advocating the importance of the idiosyncrasies of the skin to so many things. Dr. Fox referred to the fact that he had found diet a very important cause of dermatitis. In my younger days the preaching of the importance of diet by the older school was excessively overworked. The fact is that some diets do harm and some do not, and it is interesting to know that the scientific tests demonstrate the correctness of one's clinical observations. I have never recognized cabbage as a cause of dermatitis, but I shall in future keep it in mind. Dr. Stokes mentioned a case of sensitization in his own family and I have a similar experience. My daughter had at one time occasional widely separated attacks of urticaria. We found that she had an attack every

time she ate flounders. I have not met with any similar case, but I always impress on my patients the desirability of searching for a definite cause and removing it. The idiosyncrasies of the skin are the most important thing to be considered by those who are interested in dermatology.

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# THE VALUE OF PROPHYLAXIS AGAINST VENEREAL DISEASES

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The low annual incidence rate of venereal disease during the war was due to several factors which have been discussed in recent communications. The various methods[1] employed, however, would have accomplished less satisfactory results had it not been for the use of prophylactic measures. During 1918-1919, as consultant urologist to the District of Paris, I was able to study the results of prophylaxis on a large scale; and the information thus obtained forms the material of this paper.

Ashburn[2] concludes that the measures employed in combating venereal disease were effective in this order:

1. Those that keep men chaste.
2. Those that diminish the opportunities for sexual contact, especially efforts at the suppression of prostitution.
3. Those that diminish the dangers of contact, especially venereal prophylaxis.
4. Those that exact punishment..

That the first two measures accomplished something in the Paris District has been shown in a previous paper.[3] Within a two months' period, an annual incidence rate of 330 per thousand, attained during five months when no special effort was made to lower it, was cut practically in half by various disciplinary and social measures. In Paris, however, we were able to do nothing toward the suppression of prostitution; and we had the feeling, without definite proof to support it, that we did not succeed in keeping many men chaste who would not have remained so without the aid of our efforts. The element of punishment played no greater rôle among Paris troops than elsewhere in France. Yet, even without much aid from Ashburn's first two important points, the annual rate for Paris troops was finally reduced to an average level of 94 per thousand, a rate approximately the same as that for the regular army in peace time.

## IMPORTANCE OF PROPHYLAXIS

Our efforts to diminish contacts succeeded up to a certain point; but, because of our inability to control the source of contact—the prostitute—and the opportunity for contact—the small hotel—we were confronted with a minimum irreducible number of exposures. For permanent troops, as will be shown below, this averaged seventy-six exposures per thousand strength per week; for casuals, 218 per thousand per week. It can be shown that had not prophylaxis been at our disposal, there would have resulted sufficient cases of venereal diseases to produce an annual rate unequaled in our army. For the Paris District, at least, the conclusion therefore became inevitable that prophylaxis was the most powerful weapon available. Furthermore, it will be shown that prophylaxis, as we employed it, was efficacious in an unexpectedly high proportion of cases.

The situation in Paris was different in many respects from that obtaining elsewhere in France or in this country. The troops to be dealt with were divided into two main groups: a rapidly growing number of men, increasing from 5,000 to 22,000, permanently stationed in the district, to whom the city of Paris was always accessible; and casuals, at first consisting of men absent without leave or passing through Paris and later augmented, after the armistice, by men on leave.

In order to reduce the incidence of venereal disease by means of prophylaxis, the treatment must be made easily available for all men as soon as possible after exposure. This meant either that prophylactic outfits must be distributed for individual use, or that stations with trained attendants must be provided in all parts of the city and its suburbs. The first alternative was rejected both for sanitary and for moral reasons. It had been tried in our navy before the war and had failed; and it had been a failure in the New Zealand Expeditionary Force in France. It was therefore necessary to provide a great number of stations in and about Paris. The policy was adopted of opening a station in every building housing more than fifty Americans. By February, 1919, it was possible to equip no less than seventy-two stations in the district.

A sufficient number of stations having been provided, it was necessary to insure that the men knew about them, so that a man who was exposed at one end of the city would avail himself of the nearest station, without waiting one or more hours to get back to his own barracks, perhaps 10 miles distant. This was accomplished, for the permanent troops, by lists of stations, revised as necessary, posted on company bulletin boards. For casuals, cards were distributed at all railway stations, giving the locations of the most central stations. Military police were furnished with a complete list of stations, and each was required to know the location of the one closest to his beat, so that inquiries could be promptly directed.

The fact that continence is the best preventive of disease was not neglected, and great stress was laid on this point in repeated general orders and in lectures by medical and company officers. It was recognized, however, that a certain proportion of the men (33 per cent., Ashburn) were likely to be unrestrained by the influence of religion, home ties, or fear of disease, and that no matter what advice was offered or what penalties imposed, they would expose themselves repeatedly. An additional percentage exposed themselves occasionally; and a third group, under special circumstances, very rarely. On all these men it was essential to impress the value of prophylaxis, and a constant effort was necessary to keep the facts before them.

When a sufficient number of stations had been provided, and all available methods of persuasion and coercion employed to insure their use, the next question was the quality of the treatment employed. While the feeling grew that under the worst imaginable conditions prophylaxis was to some degree effective, it was obvious that a certain number of cases of venereal disease were occurring because of faults in administering the treat-

1. Young, H. H.: Preventive Medicine as Applied to Venereal and Skin Diseases, J. A. M. A. **73**: 1668 (Nov. 29) 1919.
2. Ashburn, P. M.: Factors Making for a Low Venereal Record in the American Expeditionary Forces, J. A. M. A. **73**: 1824 (Dec. 13) 1919.
3. Moore, J. E.: Venereal Campaign in Paris District of the American Expeditionary Forces, J. A. M. A. **74**: 1158 (April 24) 1920.

ment. It was discovered, for example, that a number of cases of chancroid were occurring after prophylaxis had been taken and that the reason for this was the lack of use of soap and water.[4] Our efforts were then directed toward improving the quality of the treatment given. Attendants were not assigned to stations until they had had at least one week's training in the large central venereal disease clinic of the district. Here they were given lectures, shown cases, and instructed in the technic of prophylaxis. All stations were inspected daily by a trained sergeant, and weekly by a medical officer. Each week a bulletin was distributed to the attendants, showing the number of new cases of venereal disease occurring during the week, with an analysis of the latter in relation to prophylaxis. All failures of prophylaxis were charged up to the responsible attendant and counted against him in the granting of special privileges. Thus a spirit of competition was fostered, and the morale of an otherwise objectionable job strongly bolstered up.

### METHOD OF ADMINISTERING TREATMENT

It was found necessary to adopt an absolutely iron-clad method of administering the treatment, from which no deviation was permitted. The essential points of this are worth detailing:

Under no circumstances was a patient (even an officer) allowed to administer the treatment to himself; it must always be done by the attendant. If for any reason the attendant was unable to employ the treatment exactly as directed, he must state the reasons therefor and the deviation adopted on the prophylactic record. As a first step, the patient was instructed to urinate. Then he was provided with a pint of warm water in a basin and a gauze wipe, with which he washed thoroughly, while the attendant dropped liquid soap on the penis. An examination of the genitalia was made; if the patient had a discharge or a genital sore, the fact was noted on the record and the patient instructed to report to the clinic, but this was as far as the attendant was allowed to go in making a diagnosis. He must continue the treatment as usual. The next morning, on receipt of the records at the clinic, all such records were separated from the others, and the commanding officer of the patient's organization requested to have him report for examination at once. The next step was the injection of 1 dram of a 2 per cent. protargol solution (freshly made up twice a week and kept in a closely stoppered bottle to avoid deterioration) into the urethra by the attendant. The patient then held the meatus firmly between the thumb and forefinger for five minutes, from time to time allowing a drop to escape from the meatus so that all parts of the urethra were in contact with the solution. At the end of five minutes, the protargol was allowed to escape without pressure so that a few drops remained. One-half dram of 33⅓ per cent. calomel ointment was next rubbed thoroughly by the patient, under the observation of the attendant, into all parts of the penis for five minutes, special attention being paid to the retracted prepuce, the frenum and the glans. Finally the penis was wrapped in toilet paper to protect the clothes, and the patient instructed not to urinate for four or five hours. Throughout, the strictest precautions as regards sterility of syringes by boiling was maintained to prevent transfer of infection from one patient to another.

### RECORDS OF TREATMENTS

Of the seventy-two stations in the district, twenty-five were under my immediate control. The other forty-seven stations were inspected and advised by me, and a uniform system was in use in all. Careful records were kept of each treatment, showing the name and organization and the date and hour of exposure as stated by the patient, the date and hour of treatment and the signature of the attendant, with any necessary explanatory remarks. From the twenty-five stations under my control (in which were given about 70 per cent. of the total number of treatments in the whole district), these records were sent daily to the central clinic, where they were analyzed and filed alphabetically and by dates. From the other stations weekly reports were received. New cases of venereal disease developing among permanent troops were referred to the central clinic for diagnosis. If the figures of disease to be cited represented only those cases in which the men voluntarily presented themselves for treatment, they would be of little value (this situation existed with regard to casual troops). However, two checks were afforded (1) by the prophylactic records, from the comments of which it was possible to have referred for observation all cases presenting symptoms at the time of treatment, including not only those who actually had a venereal disease but also those who, by virtue of abrasions, etc., were more than likely to develop one; and (2) by means of bimonthly physical inspections by teams of medical officers, attendance at which was rigidly insisted on, with adequate penalties provided for absenteeism. In addition, arrangements were made through the French Service de Santé and the American Red Cross that no American soldier with venereal disease would be permitted to take treatment at any of their hospitals or clinics, thus closing all avenues of

TABLE 1.—FIGURES FOR ENTIRE PERIOD

| Total Prophylactic Treatments | New Cases of Venereal Disease Among Permanent Troops and Casuals | Occurrence after No Prophylactic Treatment (Patient's Statement Only) | Prophylaxis Claimed But Not Verified, Either Because Claimed Elsewhere Than Paris (U. S. or Other Parts of France) or, if Claimed in Paris, No Records Could Be Found | Failure Because of Man's Own Fault (See Reasons, Columns 8 to 12, Table 2) | Genuine Failures (Statement of Patient Checks With Record; No Faults Discovered in Methods of Treatment) |
|---|---|---|---|---|---|
| 95,916 (Includes all treatments given in Dist.) | 1,845 | 1,037 (56.2%) | | | |
| Whole Period: 35,086 | 942 | 560 (59.4%) | 235 (24.9%) | 71 (7.5%) | 76 (8.06%) |
| Period 2—May-November, 1918: 28,258 (Includes only treatments given at stations under my personal command, records from which could be verified) | 620 | 373 (60.1%) | 152 (Total of Cols. 4 and 7, Table 2) (24.5%) | 60 (Total of Cols. 8, 9, 10, 11 and 12, Table 2) (9.6%) | 35 (5.6%) |
| Period 3—Nov. 8, 1918-March 5, 1919: Total of Periods 2 and 3 63,344 | 1,562 | 933 (59.7%) | 387 (24.7%) | 131 (8.5%) | 111 (6.8%) |

4. Moore, J. E.: The Diagnosis of Chancroid, and the Effect of Prophylaxis on Its Incidence in the American Expeditionary Forces, J. Urol. 4: 169 (April) 1920.

treatment except that afforded by the army. It is felt, therefore, that for permanent troops at least, practically every case of disease that developed is shown in the figures presented herewith.

As will be evident from the tables, the year for which I have figures can be divided into three periods: (1) the whole period, for which no figures are at hand except the total number of treatments given (95,916) and the total number of new cases of disease (1,845) among permanent troops and casuals, with the fact that in 56.2 per cent. of all cases of disease, the patients admitted failure to use prophylaxis; (2) a period of six months, from May to November, 1918, during which somewhat more accurate figures were kept; and (3) the last period of fifteen weeks, included in the time between Nov. 1, 1918, and March 5, 1919, from the detailed figures of which a statistical study of the efficacy of prophylaxis can be made.

### EFFICACY OF PROPHYLAXIS

In attempting to determine the relative percentage failure of prophylaxis, more is necessary than the simple acceptance of the patient's word that he took the treatment, and the conclusion that he developed disease because prophylaxis failed to prevent it. If this method be adopted, we should reach the conclusion that about 40 per cent. of all cases of disease developed in spite of prophylaxis, since any set of figures, at least from the Paris District, are uniform in that almost exactly 40 per cent. of the men claimed to have taken the treatment.

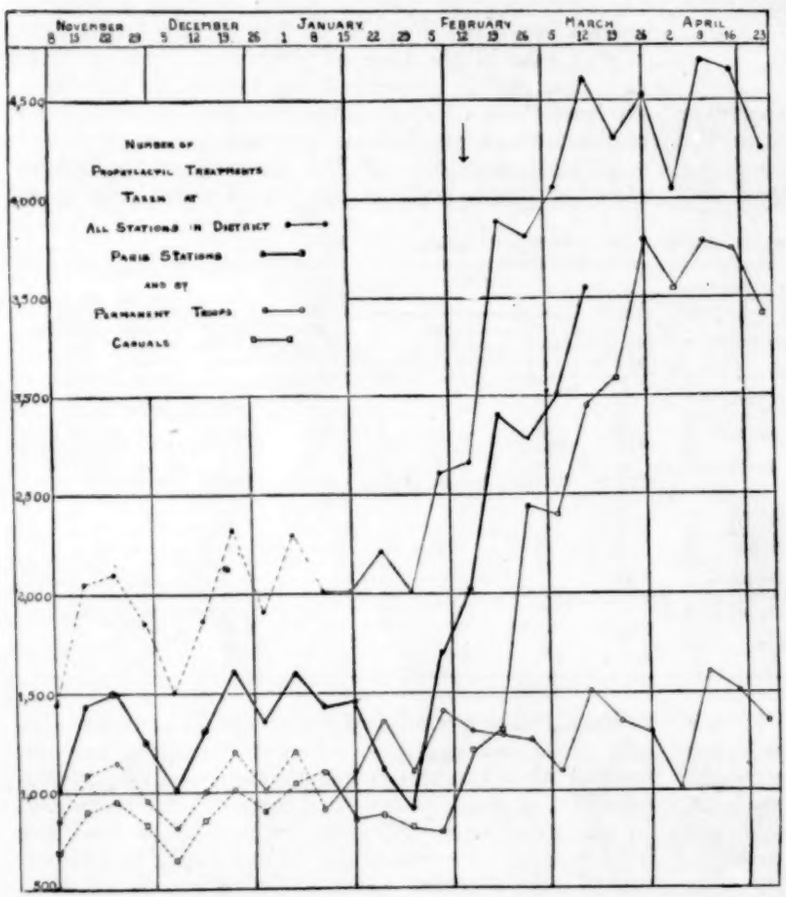
That this is by no means the case will appear in Table 2. During the fifteen week period that this table covers, 620 cases of venereal disease developed among permanent and casual troops. Of these, 373, or 60.1 per cent., admitted not having used prophylaxis. An additional 108, or 18.7 per cent., stated that they had taken the treatment elsewhere than the Paris District, often in the United States. The statements of these men could not be verified. The remaining 139 all claimed to have taken prophylaxis in the Paris District, and because of our system the truth of their statements could be proved. In forty-four of the latter cases, or 36.1 per cent., no record of prophylaxis could be found, demonstrating that these men had not taken treatment at all. If we assume that in 31.6 per cent. of the 108 cases in which it was claimed that treatment had been given elsewhere than in Paris the patient's statement could also be proved false, we find that instead of 373 cases, 60.1 per cent., occurring after no prophylaxis, we have 451 cases, or 72.7 per cent., in which the patients failed to use it. On further examination, we find that of the ninety-five patients whose statements could be verified, sixty developed disease for various reasons having no relation to the efficacy of the treatment: either they waited more than eight hours after exposure (Rigg's report shows that treatment after a seven hour interval is of little avail); or they stated that their exposure and treatment was on a date which could have had no relation to the development of disease (for example, a patient develops gonorrhea, January 3, which he claims is the result of exposure, Novermber 25—a statement so obviously impossible that it is evident that he refers back to the date of his last treatment, instead of his last exposure, in the hope of mitigating his court martial sentence); or they admitted multiple exposures, some without prophylaxis; or they already had a venereal disease at the time of treatment; or they failed to follow out the prescribed regulations for treatment. At least three of these categories also imply that the statement that prophylaxis was taken is false, which would add an additional 21.6 per cent. of the number claiming prophylaxis to the list of those who failed to use it, making a total of 504 of the 620 cases of disease (81.2 per cent.) in which prophylaxis was not used at all. We thus conclude that of 620 patients, only 116, or 18.8 per cent. took prophylactic treatment. In only thirty-five (5.6 per cent.) of these cases can it be proved, even when the widest laxity is allowed, that disease occurred because the treatment failed to prevent it.

In order to determine the percentage failure of prophylaxis, one must divide the number of failures of prophylaxis in a given number of troops by the number of prophylactic treatments taken by the same troops. Here a double error, partially unavoidable, is introduced. There is no way to determine how many infections will result from a given number of exposures without prophylaxis. That not every man will be infected is certain, owing to varying conditions of exposure and local immunity. The only available figures on this point are those deduced by Ashburn [2] from a questionnaire prepared by him. He concludes, from 13,649 replies received from four different areas of France, that for each case of disease there were approximately ninety exposures with prophylaxis and thirty without. There are obvious limitations and errors to this method of investigation, and the accuracy of the conclusions is not above suspicion. In Paris,

TABLE 2.—FIGURES OF PERIOD FROM NOV. 8, 1918, TO MARCH 5, 1919

| | Total Prophylactic Treatments Given at Paris Stations | New Cases of Venereal Disease, All Troops | Occurring After No Prophylaxis | Prophylaxis Claimed Outside Paris, Hence Unverified | Prophylaxis Claimed in Paris | | | No Records Found; Patient Did Not Use Prophylaxis | Failure of Prophylaxis Due to Fault of Patient: Incubation Period Interval Plus 8 Hours | Incubation Period Plus or Minus | Multiple Exposures | Had V. D. at Time of Treatment | Failure to Follow Directions | Genuine Failures Chargeable to Treatment | Failure of Prophylaxis, per Cent. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permanent Troops | 9 890 (Estimated; see text) | 395 | 238 | 55 | 108 | Gonor. | 63 | 15 | 9 | 6 | 1 | 6 | 3 | 23 | .... |
| | | | | | | Chanc. | 29 | 8 | 6 | 2 | 5 | 1 | — | 7 | .... |
| | | | | | | Syph. | 16 | 6 | 4 | — | 3 | — | — | 3 | .... |
| | | | | | | Total | 108 | 29 | 19 | 8 | 9 | 7 | 3 | 33 | 0.33 |
| | | | (60.3%) | (13.9%) | (27.3%) | | | (26.8%) | (17.5%) | (7.4%) | (8.3%) | (6.4%) | (2.7%) | (30.5%) | |
| Casuals | 18,368 (Estimated; see text) | 225 | 135 | 53 | 31 | Gonor. | 16 | 8 | 3 | 1 | — | 2 | — | 2 | .... |
| | | | (60.0%) | (23.5%) | (13.7%) | Chanc. | 9 | 3 | 3 | 1 | — | 1 | 1 | — | .... |
| | | | | | | Syph. | 6 | 4 | 1 | — | 1 | — | — | — | .... |
| | | | | | | Total | 31 | 15 | 7 | 2 | 1 | 3 | 1 | 2 | .... |
| Total | 28,258 | 620 | 373 | 108 | 139 | Grand total | 139 | 44 | 26 | 10 | 10 | 10 | 4 | 35 | .... |
| | | | (60.1%) | (17.4%) | (22.4%) | | | (31.9%) | (18.7%) | (6.2%) | (6.2%) | (6.2%) | (0.6%) | (25.1%) | |
| Column | 1 | 2 | 3 | 4 | 5 | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

there were fifty-two exposures with prophylaxis for each case of disease. If we assume, as does Ashburn, that thirty exposures without prophylaxis took place for each new case, then there must have been 55,350 exposures without prophylaxis, from which arose 81.2 per cent. of all disease, or 1,498 cases. In other words, of every thirty-seven men who exposed themselves and failed to use prophylaxis, one contracted venereal disease. If the 95,126 men who took prophylaxis had failed to use it, there would have resulted on this basis an additional 2,571 new cases which were avoided because prophylaxis existed. To put it differently, there resulted from 95,126 exposures with prophylaxis only one case of disease for every 274 exposures, so that the man who failed to use the treatment was more




Prophylactic treatments from Nov. 8, 1918, to April 23, 1919. Where the dotted line is used, the figures are estimated.

than seven times as likely to contract disease as the man who did use it.

The other point of error which creeps in is in the division of the treatments given the permanent troops and casuals. Unfortunately, for the Paris stations alone no such division was made at the time; and it is from these stations that the figures are drawn. An accurate estimate can, however, be reached.

The accompanying chart shows the number of treatments given (1) at all stations in the district; (2) to permanent troops; (3) to casual troops; and (4) at the Paris stations under my direction. From November 8 to January 8, the only figures at hand are those of all troops at Paris stations. From January 8 on, the others became available. During the week ending February 19, the tremendous increase due to the influx of troops on leave becomes evident, and is a disturbing factor from thence onward. For ten weeks (January 1-March 12) during which Paris stations can be compared with the whole district, 70.2 per cent. of all treatments were given at Paris stations. From this the whole district figures can be established backward. There is a six week period, moreover (January 8-February 16), when all four figures are available and during which, as inspection of the chart will show, they were relatively stable. From this six weeks, it is possible to extend backward the factors of total treatments to permanent troops and to casuals. During the six weeks January 8-February 15, permanent troops took a weekly average of 1,239 treatments, while casuals averaged 1,041 (total average, 2,280). Thus, in this period permanent troops took 54.3 per cent. of all treatments given, while casuals took 45.7 per cent. In this time, except for the last two weeks, when a few leave men (perhaps from 100 to 300 a day) began to enter, it is fair to assume that the number of casuals was fairly well fixed. When the estimated extension backward is made, one finds that during the period of fifteen weeks covered by Period 3, while 28,258 treatments were given at Paris stations, all stations in the district gave 39,340 treatments, of which 17,663 were to permanent troops and 21,676 to casuals.

During a ten week period (January 8-March 12) there were given, in the whole district, 12,788 treatments to permanent troops, of which 7,146, or 56 per cent., were given at Paris stations. Applied to the whole period under discussion (17,663 treatments to permanent troops during Period 3), we arrive at the conclusion that 9,890, or 34.9 per cent., of the 28,258 treatments were given to permanent troops, while 18,368, or 65.1 per cent., were given to casuals.

By applying the figure 9,890 to the Paris troops in Table 2, we can determine that from this number of prophylactic treatments, only thirty-three new cases of venereal disease arose because of actual failure of the treatment—a percentage failure of 0.33. This figure is considerably lower than the 1.7 per cent. mentioned by Young. This means that the prophylactic treatment as we employed it is 99.6 per cent. efficient. The results are more striking when it is considered that many of the treatments were taken long after the optimum period of one hour after exposure had lapsed—in some cases, as long as twenty-four hours.

An estimate of the percentage failure of the total number of treatments, including those given casuals, is impossible because of the fact that disease among those troops usually did not develop until they had left Paris and returned to their own organizations.

It is of interest to note the difference in the exposure rate of permanent troops and casuals. The weekly exposure rate for permanent troops equals the average weekly number of prophylactic treatments divided by the average mean strength, which for the 16 weeks January 8-April 23, is 1,317 ÷ 17,153, or 0.076 (76

exposures per thousand men). For casuals this is more difficult to estimate, since the strength for the period January 8-February 12 is unkown. However, during this period casuals took 6,247 treatments (average, 1,041), while in the same period the average for permanents was 1,239. During the next ten weeks, in addition to the ordinary floating personnel, leave was opened, and about 1,500 men arrived each day (for three day periods), so that each week about 9,000 men passed through the city. During this period, casuals took 29,925 treatments, a weekly average of 2,992. If from this figure (2,992) we subtract the average 1,041, representing the treatments taken by the "fixed" number of casuals, which presumably did not vary, we arrive at the conclusion that approximately 9,000 leave men took a weekly average of 1,951 treatments. This being so, the weekly exposure rate for leave men is represented by the figure 0.2185 (219 per thousand men)—a rate three times as high as that for permanent troops.

TABLE 3.—FIGURES OF PERIOD FROM JAN. 8 TO APRIL 23, 1919

| | Total Number of Cases Developing Among All Troops | Per Cent. of Total Disease | Estimated Number of the 620 Cases in Table 2 | Patients Who Did Not Take Prophylaxis* | | Patients in Whom Prophylaxis Failed Because of Own Fault | | Genuine Failures of Prophylaxis | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | No. | Per Cent. | No. | Per Cent. | No. | Per Cent. |
| Gonorrhea.. | 569 | 65.1 | 404 | 348 | 86.1 | 31 | 7.6 | 25 | 6.1 |
| Chancroid... | 214 | 24.5 | 152 | 125 | 82.2 | 20 | 13.0 | 7 | 4.8 |
| Syphilis..... | 89 | 10.1 | 63 | 51 | 80 9 | 9 | 14.2 | 3 | 4.7 |
| Tota's..... | 814 | 99.7 | 619 | 524 | 84.6 | 60 | 9 6 | 35 | 5.6 |

* Patient's statement plus failure to verify by record.

Further inspection of Tables 1 and 2 reveals information of value. Period 2 (May-November, 1918) is not subject to the same careful analysis as Period 3 (covered in Table 2), but it does show the fact that of the total cases of venereal disease, seventy-six, or 8.06 per cent., developed because of failure of the treatment. It was about at the end of this period that a definite effort to improve the quality of the treatment was undertaken. The corresponding percentage for Period 3—5.6 per cent.—is proof that a certain number of new cases can be prevented by more care in administering the treatment, and represents a reduction of 31.6 per cent. in the cases occurring in spite of prophylaxis.

In Table 3 an effort has been made to discover whether or not the prophylactic treatment as we employed it was more or less efficacious against the three different diseases. The 620 cases covered in Table 2 are used for this purpose. No record was kept of the number of cases of gonorrhea, chancroid and syphilis in this total, but from a longer period (during which time a part of the 620 cases occurred) in which the figures are available, an accurate estimate can be made. In sixteen weeks, there developed a total of 814 new cases, of which 65.1 per cent. were gonorrhea, 24.5 per cent. chancroid, and 10.1 per cent. syphilis. Applying these percentages to the 620 cases, we find that there were 404 cases of gonorrhea, 152 of chancroid, and fifty-one of syphilis. The percentage of each of these who failed to take prophylaxis is in close agreement. It is interesting to note that there developed because of the patient's fault in using the treatment (Table 2), only 7.6 per cent. of the cases of gonorrhea as compared with 13 per cent. chancroid and 14.2 per cent. syphilis; and that disease developed because of actual failure of the treatment in a slightly higher percentage of gonorrhea than of the other two diseases. The difference in these percentages is too slight to be regarded as of importance. If the probable statistical error is taken into account, we find no evidence that prophylaxis was either more or less effective against any of the three diseases. The conclusions drawn in a previous paper as regards the effect of prophylaxis on the incidence of chancroid are by no means vitiated by this result, since the period covered in that paper was one much earlier than the one now under discussion.

### CONCLUSIONS

1. So far as the District of Paris was concerned, the use of prophylaxis was the largest single factor in the prevention of venereal disease. With Ashburn's figures on the relation of exposure to disease as a basis for argument, it is estimated that 2,571 new cases of disease were prevented.

2. The method of prophylaxis described is calculated to make the treatment more efficacious.

3. The statistics presented show that prophylaxis is 99.6 per cent. efficient in the circumstances under which we employed it.

4. Prophylaxis is probably equally efficacious against all three venereal diseases.

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# DEVELOPMENT OF THE BACTERICIDAL POWER OF WHOLE BLOOD AND ANTIBODIES IN SERUM *

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KENNETH FOWLER, M.D.
AND
PAUL PIERCE, A.B.
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The announcement by Heist and the Solis-Cohens [1] of a method adapted to the determination of the bactericidal power of blood before clotting has occurred apparently opens a new avenue of approach to some phases of immunology. Using the pneumococcus, they showed a high bactericidal titer in the naturally immune pigeon, while the blood of the nonresistant white mouse was devoid of bactericidal power. They called attention to the decisive bactericidal activity as contrasted with the absence of agglutinins, complement fixing bodies and opsonins. Apparently, this method has as its basis a fundamental condition which could not be determined by the known serum tests and should offer a means of explaining natural immunity in the absence of antibodies in the serum and defibrinated blood. They advance the hypothesis that the "number of organisms destroyed by the blood is, to a certain extent, proportional to the natural immunity . . . to the organism. This likewise appears to be true of the immunity induced by inoculation."

* From the Laboratory of Bacteriology of Baylor University College of Medicine.

* Read before the Section on Pathology and Physiology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Heist, G. D.; Solis-Cohen, S., and Solis-Cohen, M.: The Bactericidal Action of Whole Blood with a New Technique for Its Determination, J. Immunology 3: 261 (July) 1918.

PLAN OF EXPERIMENTS

The work reported here was undertaken primarily to determine: (1) whether this method would prove serviceable in demonstrating the progress of the development of an artificially induced immunity; (2) whether any recognizable relationship may exist between the bactericidal titer of the whole blood and the antibodies in the serum, and (3) whether any information may be obtained by this method as to the mechanism of the bactericidal action.

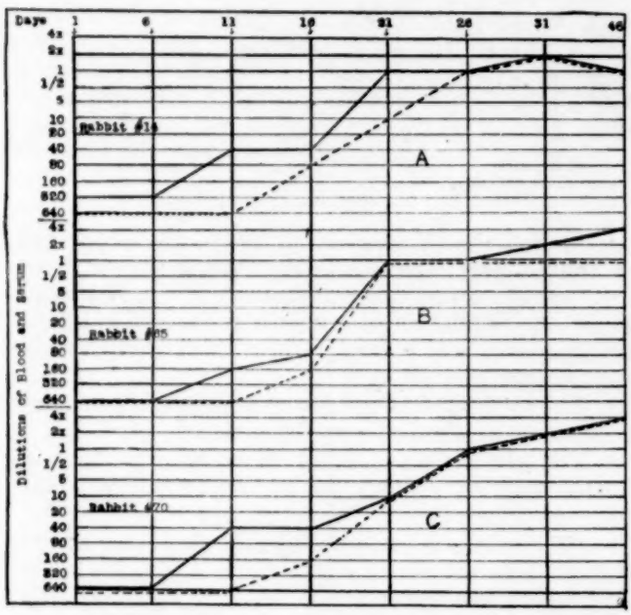


Chart 1.—Bactericidal tests of blood and serum: solid line, blood; broken line, serum: *A*, intravenous inoculation; *B*, subcutaneous inoculation; *C*, intraperitoneal inoculation.

The typhoid bacillus was selected for our work in order (1) to obviate, by the use of an organism which grew quite uniformly, the difficulty encountered by Heist and the Solis-Cohens due to the irregular growth of the pneumococcus, making comparable determinations from day to day difficult and necessitating wide steps in dilution; (2) to determine whether the same results could be obtained with an organism of entirely different type, and (3) because it was felt desirable, in this work, to use an organism which readily stimulates the production of antibodies in the serum.

A recently isolated culture was secured from the laboratory of the base hospital at Fort Sam Houston. This was shown by inoculation to be highly virulent. The culture was kept in the icebox and from it daily transplants were made into tubes containing uniform quantities of broth and in which uniform growth was readily obtained, These twenty-four hour cultures were used for all bactericidal tests.

Rabbits were used because of their availability and their ability to furnish sufficient blood for all tests. Although they are known to possess a certain immunity to typhoid bacilli, and Bull[2] states that normal rabbits agglutinate typhoid bacilli in vivo, we found only one serum agglutinating in a dilution as high as 1:4. One showed fixation of complement in a dilution of 1:16. In none were typhoid bacilli killed in a greater concentration than 1:640 of a twenty-four hour culture. However, to care for this possible objection, a virulent culture of *B. dysenteriae*, Shiga, was secured through the courtesy of H. K. Mulford Company and two rabbits were immunized with this organism. As will be seen, the results were entirely comparable to those obtained with typhoid bacilli.

The bactericidal titer of the blood was compared with simultaneous determinations of the bactericidal titer of the serum, complement fixation, agglutination, the leukocyte count, and the phagocytic index. Control tests were made before immunization was begun. An autolysate, as recommended by Perry and Kolmer,[3] was used for all typhoid injections, while the dysentery bacilli were washed to remove any possible soluble toxin and killed by heat. Injections were made each five days, and twenty million organisms per kilogram of body weight were given at each injection. To determine any possible influence on the curve of development by the route of injection, certain of the animals were inoculated subcutaneously, others intravenously, and one, intraperitoneally. The bactericidal tests on the blood and serum followed faithfully the technic of Heist and the Solis-Cohens.[1] For the macroscopic agglutinations we used a formaldehyd-treated culture prepared according to the method proposed by Dreyer. The autolysate (two billion per cubic centimeter) was used as antigen for the complement fixation tests. Leukocyte counts were made twenty-four hours after the injections with the expectation of finding the counts at their highest points. The phagocytic activity was measured by mixing in capillary tubes equal quantities of the rabbit's own leukocytes, serum and the twenty-four hour culture. On the day of injection, blood was drawn for all tests save the leukocyte counts, thus providing a record each five days. Six injections were given each rabbit, and tests were made five and twenty days, respectively, after the last injection.

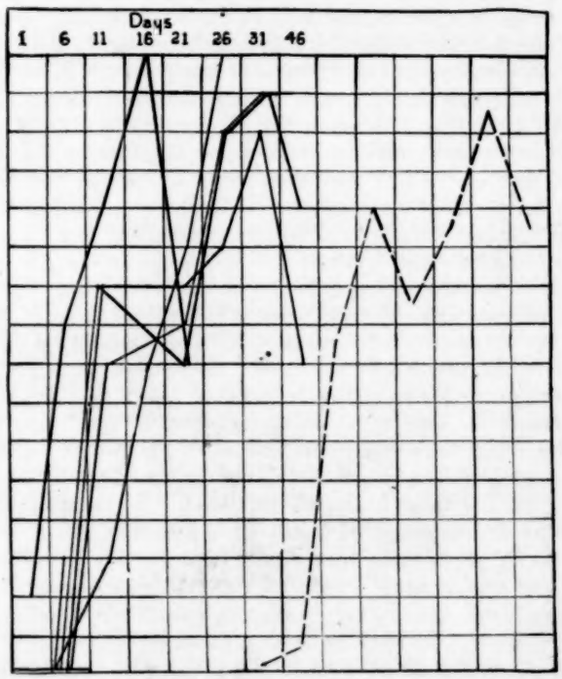


Chart 2.—Development of agglutinins: solid lines, all curves, broken line, average curve.

2. Bull, C. G.: J. Exper. Med. **21**: 484, 1915; **24**: 25 (July) 1916.

3. Perry, M. W., and Kolmer, J. A.: J. Immunology **3**: 247 (July) 1918.

EXPLANATION OF CHARTS

It will be seen from Chart 1 that the development of the bactercidal power of the blood is quite comparable regardless of the route of inoculation. It will also be noted that the bactericidal titer of the serum,

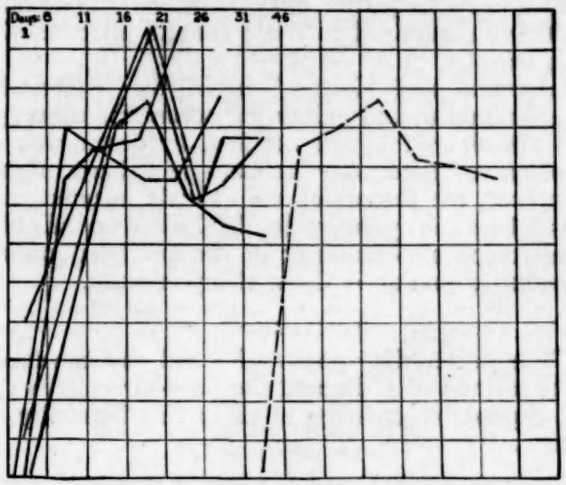


Chart 3.—Complement fixation: solid line, all curves, broken line, average curve.

while developing somewhat more slowly than that of the blood, soon reaches and maintains approximately the same level. This was true for all rabbits whether inoculated with typhoid or dysentery bacilli.

Chart 2 illustrates the development of agglutinins, and shows not only considerable differences in the curves but also a fall in the curve in some before immunization has been completed.

Chart 3 shows the complement fixation curves and demonstrates that, while there is more uniformity than in the preceding chart, there may also be seen in some of them a falling curve.

The leukocyte counts are shown in Chart 4. There is a marked lack of uniformity, and it is easily seen that the peak of the curve does not, in several instances, correspond to the period of immunization. It may also be noted that, with one exception, the last count is not materially higher than the first.

The phagocytic indexes, while showing some general uniformity, as seen in Chart 5, also show a falling curve as immunization proceeds.

Chart 6 presents, for comparison, curves illustrating the development of the various substances in the blood and serum. These curves are the averages obtained from all rabbits used. They show plainly that the leukocyte count and the phagocytic index are not reliable criteria by which to judge the bactericidal power. In a general way, the complement fixation and agglutination curves are representative. However, they develop more rapidly and, after considerable height has been reached, show wide fluctuations so that they do not illustrate with any exactness changes of moderate degree in the actual bactericidal power. The paralleling of the blood curve by the serum curve is quite striking and demonstrates that, so far as the typhoid and desentery bacilli are concerned, the determination of the bactericidal titer of serum is of as much value as the examination of the unclotted blood. This is in marked contrast to the findings of Heist and the Solis-Cohens when they used pneumococci.

In an attempt to secure information as to the mechanism of destruction of bacteria by the blood, the blood of the immunized animals was set up with an undiluted culture and incubated for periods of time ranging from five minutes to twenty-four hours. Much to our surprise, it was found that the organisms were destroyed at the end of five minutes. No bacilli or recognizable fragments could be seen in the leukocytes, and we believe that phagocytosis was not concerned in their destruction. In the earlier stages of immunization, it was common to find agglutinated masses of organisms; but after immunization had been completed, lysis occurred so rapidly that no evidence of any previous agglutination could be obtained.

Since the citrate method of transfusion has become the method of choice, and since the transfusion of convalescent and "immune" blood in the treatment of the infections is becoming more frequent, it was felt that it would be worth while to determine whether citrating the blood of these immunized animals would interfere with the bactericidal power. At the completion of immunization, tests were set up using citrated and defibrinated blood. Destruction of organisms was complete. Varying concentrations of sodium citrate making a final dilution of citrate in the blood ranging from 0.5 to 2 per cent. were used, and organisms were destroyed in all. Citrated blood which had been allowed to stand in the icebox for six hours had lost none of its bactericidal power. Simultaneous tests of the whole blood, serum and citrated blood showed (Chart 7) that, while destruction of all organisms occurred in all tests, the lytic action of the serum and citrated blood was materially slower than that of the fresh, whole blood. This chart will also serve to show that twenty-four hours was not by any means necessary for the determination of the bactericidal power. If this should be found true for other organisms, it should be of material value in greatly shortening the time required for these tests.

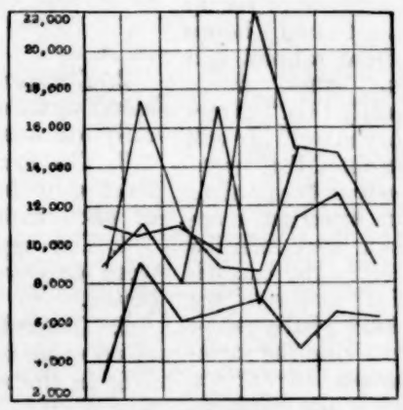


Chart 4.—Leukocyte counts.

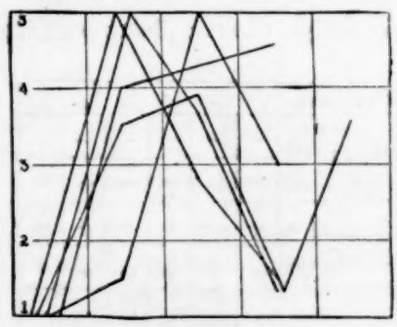


Chart 5.—Phagocytic index.

The statement of Heist and the Solis-Cohens [1] that contaminations were infrequent, and that only organisms virulent for that animal would grow in its blood, has not been confirmed by us. We have allowed blood to flow from the vein of an uncleaned ear and have found many tubes to show contaminating organisms at the end of the twenty-four hour incubation period. These organisms were found to be different from day

to day, and frequently in different tubes on the same day. The possibility of their origin in the culture was excluded. Cutting down the incubation time to one hour did not interfere with the killing of the

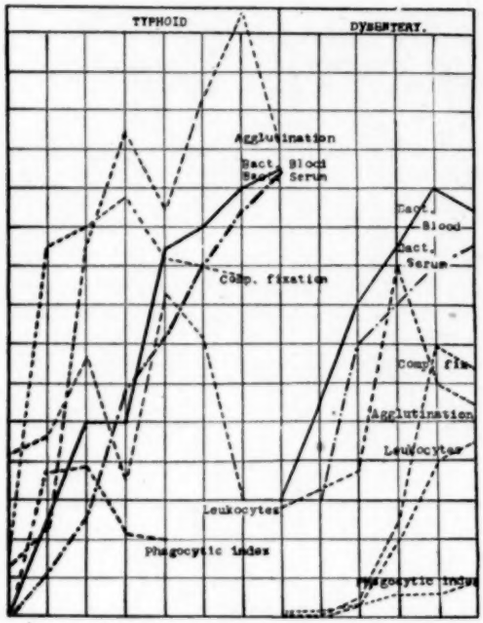


Chart 6.—Average curves superimposed.

organisms, but did materially assist in keeping down the contaminating bacteria.

Teague and McWilliams [4] reported finding normal rabbits protected against a lethal dose of living typhoid bacilli twenty-four hours after an intravenous injection of killed bacilli. They termed this the "refractory state," and concluded that it probably had some bearing on the phenomena seen in the clinical course of typhoid patients subsequent to intravenous injection of typhoid vaccine. To determine whether or not this "refractory state" had its counterpart in the bactericidal power of the blood, tests were set up twenty-four, forty-eight and seventy-two hours after the first injection. One of these rabbits had been injected subcutaneously; the other, intravenously. Chart 8 illustrates graphically this "refractory state." It will be noted that twenty-four hours after the injection, there is a very marked rise in the bactericidal power of the blood of the rabbit receiving the intravenous injection, while the blood of the other shows a very slight change. Twenty-four hours later conditions were reversed; the blood of the rabbit subcutaneously injected then killed the organisms in high concentration, while the blood of the other had dropped to almost its former level. At the end of seventy-two hours, both were killing undiluted culture. This apparently demonstrates a basis for the "refractory state," and also seems to show that after a single injection, mobilization of lytic substances is slower following subcutaneous than intravenous injection. That this is not true for subsequent injections is seen also from the chart, as it shows, twenty-four hours after the second injection, a rise to the point attained previously after forty-eight hours. The same results were obtained in those rabbits injected with Shiga bacilli.

| Minutes: | | 5 | 10 | 15 | 20 | 30 | 60 |
|---|---|---|---|---|---|---|---|
| Blood | 14 | − | − | − | − | − | − |
| | 132 | − | − | − | − | − | − |
| Citrated Blood | 14 | + | ++ | + | + | + | − |
| | 132 | + | + | + | + | − | − |
| Serum | 14 | +++ | +++ | ++ | + | − | − |
| | 132 | + | + | + | + | + | − |

Chart 7.—Incubation time required.

Matsunami and Kolmer [5] found the bactericidal power of human and guinea-pig serum for meningococci diminished, though not lost, by destruction of complement. After our animals had been highly immunized, the serums of the animals injected with both typhoid and dysentery bacilli showed no difficulty in destroying all organisms of the undiluted culture after inactivation at 55 C. for thirty minutes.

## CONCLUSIONS

1. The bactericidal power of blood as determined by the method of Heist and the Solis-Cohens [6] is the most dependable criterion of the actual immunity of the animal.

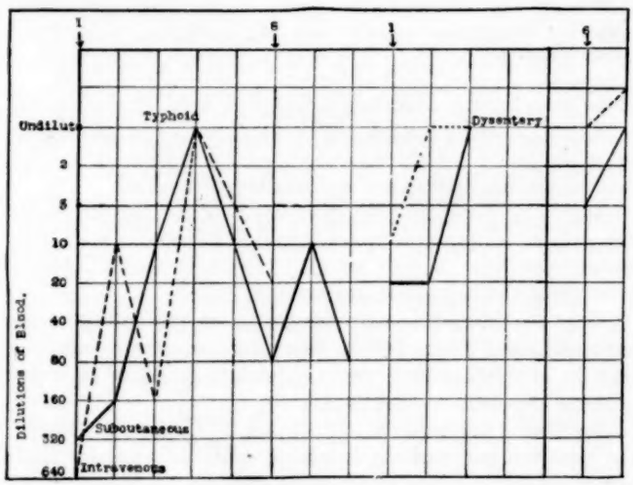


Chart 8.—"Refractory periods."

2. The development of the bactericidal power of the blood against typhoid and Shiga bacilli was practically identical with that of the serum.

3. The route of inoculation made no material difference in the rapidity or height of the development of bactericidal power.

4. The agglutinins and complement fixing bodies were only roughly comparable to the bactericidal power.

5. The leukocyte counts and phagocytic index were of no value in determining the degree of immunity.

6. In the rabbit immunized to typhoid and dysentery bacilli, lysis occurs with great rapidity, and a short incubation period is sufficient.

7. No evidence could be secured as to the mechanism of lysis. Phagocytosis, in all probability, was not a factor.

8. Citrating and defibrinating blood of rabbits immunized to typhoid and dysentery bacilli did not affect the bactericidal activity save to slow the reaction.

4. Teague, O., and McWilliams, H. I.: J. Immunology **2**: 185 (Feb.) 1917.

5. Matsunami, T., and Kolmer, J. A.: J. Immunology **3**: 177 (May) 1918.

6. Heist, G. D., and Solis-Cohen, S.: J. Immunology **4**: 147 (July) 1919.

9. In the blood of typhoid and dysentery immune animals, contaminating organisms may grow luxuriantly. A short incubation period removes most of the difficulty due to contaminants.

10. The refractory state of Teague and McWilliams is shown to depend probably on a rapid rise in bactericidal power, and the rapidity of mobilization of this power varies with the route of injection.

11. Inactivation of serum of immunized rabbits did not materially reduce the bactericidal action.

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ABSTRACT OF DISCUSSION

DR. D. J. DAVIS, Chicago: Some years ago I was interested in this problem in studying meningococci. I found that meningococci when placed in normal defibrinated blood would in some cases develop, while in others they would not. I never found meningococci that would live in the blood of a patient who had recovered from meningitis. The meningococci, however, when planted in human serum, whether it was serum from a normal person or from a person who had meningitis, will not grow. Defibrinated human blood, therefore, is a far better medium for the growth of meningococci than serum. I think the results which I obtained with meningococci are in general accord with those reported by Dr. Black. I did not find that the leukocytes in the blood had any appreciable effect on the growth of meningococci.

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# THE SEGREGATION OF PNEUMONIA*

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NEW YORK

The study of means for the protection and care of the child has received a tremendous impetus from the World War, and never before has the attention of so many agencies been concentrated upon its problems.

Our country has been peculiarly fortunate in this respect, owing to the foundation that has been laid in former years. Not only had the science and art of pediatrics attained an enviable position of development here; but the purity of our milk supply, the supervision of the child in the school, prenatal care, milk depots, health centers, the prevention of tuberculosis and blindness, the operation of health boards, and all forms of social service activity had advanced to a point at which the work exceeded both in amount and excellence that of other countries.

In consequence, we were not only able to spare trained and enthusiastic workers who gave themselves unselfishly to the task of ameliorating the lot of the child on the war-torn continent, but we were also prepared with the insight and trained personnel necessary to embark on a continent-wide crusade on behalf of the child in our own land.

It would be almost impossible to estimate the concrete benefits of the children's year in our national life, and many of the seeds sown will not reach their fullest fruition for years to come. This work will go on, and public conscience once awakened will, with our characteristic national energy, peer into the dark places and demand progress where heretofore there has been little or none.

Already greater attention is being paid to the prevention of infectious diseases, especially of such as bear particularly upon the child. Here adequate separation of the sick from the well is indispensable, and the principle is capable not only of stricter enforcement, as in rural communities, but also of intelligent extension everywhere into new fields. One of the latter I would bring to your attention.

Pneumonia is admittedly one of the great endemic plagues of the world, for which less has been accomplished by way of limitation of its ravages than for any other malady of like importance save pandemic influenza. This has been due, not to any lack of interest in the problem, but rather to its complexities, since the processes we call pneumonia are several pathologic entities, of diverse etiology, and with somewhat loosely correlated clinical manifestations. I need enter on no general discussion of the pneumonias of childhood, with which all physicians are familiar, and the direct and indirect mortality of which is well known.

Untiring effort has been expended on the pneumonia group in countless laboratories; but while many separate links in the chain of knowledge have been forged, little has been accomplished in welding them together to bind and limit the scourge. Even in the matter of treatment, if we except the serovaccines developed by Cole—which are as yet little applicable to the young—we are still forced to content ourselves with supporting nature until her time-honored vis medicatrix fails or effects a cure.

Possibly, however, while all energies have been directed to the most serious end of averting catastrophe in the presence of established pneumonia processes, we have not considered so clearly the possibilities of guarding against their inception. We may not have been sufficiently punctilious in taking measures to prevent the individual from becoming infected. Here also the field is a wide one, worthy of further pains-taking study.

But there is one patent avenue which has not been properly guarded. I refer to that of the exposures of susceptible individuals in dangerous propinquity to those having active cases of the disease. I do not think that this is stating the matter too strongly.

In the pneumonias we have processes caused by the presence of micro-organisms of recognized pathogenic virulence. In common with other acute affections of the respiratory tract accompanied by cough, we know that the active micro-organisms of the pneumonias may be distributed within certain limits in the surrounding air by the act of coughing. Yet it has long been our common custom to treat pneumonia patients in the general wards of our hospitals, and to place about them in the home only the ordinary precautions of the sickroom.

It is not only pathetic but humiliating to realize that it required a devastating experience in our military camps with pneumonia in measles, and with pneumonia in influenza, to force any considerable recognition of the infectiousness of pneumonia. Segregation of such cases may, heretofore, have been practiced by thoughtful individuals: but the idea had not found its way, and has not yet done so, to the general medical conscience, nor been advocated widely in our literature as a self-evident proposition. The question may very properly be raised whether, granting the theoretical possibility of such transmission of pneumonia, there is proof that it takes place.

No one questions the contagiousness of smallpox, measles, mumps or whooping cough. The periods of incubation are too definite and the susceptibility too

* President's address, read before the American Pediatric Society, Highland Park, Ill., May 30, 1920.

general. This was not so, however, at one time with tuberculosis, whose period of incubation was long and to which susceptibility was less general.

To demonstrate a new matter convincingly, one must select the most credible instances. Such a one is measles-pneumonia occurring in groups. Years ago, in a children's hospital, I repeatedly had the opportunity both as physician and as pathologist, to observe the incidence of pneumonia in wards quarantined for general outbreaks of measles, and also among groups of children who were segregated as they showed evidence of measles. Whenever pneumonia appeared among such children quarantined for measles, it extended rapidly with an appalling mortality. Such an experience is not readily forgotten.

Similar observations were made in the quarantine pavilion of another institution, and have been confirmed by the reports published by others. I have therefore for years insisted, when possible, on the prompt isolation of the first pneumonia patients among children having measles, with a resulting limitation of the number of cases, and have extended the practice of segregation to all pneumonias.

Others, reviewing their own experience, must have noticed that measles epidemics among grouped children are usually simple, with the exception of the common ear complications, until the appearance of pneumonia changes the picture. They will probably also have observed that during ward epidemics of "colds" or grip, and even in families, pneumonias occur in groups strongly suggestive of direct infection. There is, however, no reason for believing that susceptibility to infection from pneumonia is limited to those already suffering from measles and other catarrhal processes.

That pneumonia patients should not be allowed to remain in close propinquity to other persons, even those of apparently fairly normal condition, appears scarcely debatable. Yet there is little apparent appreciation of the risk involved in our present lax methods. It has so long been customary to treat pneumonia patients in general wards that its propriety seems to be accepted without question. The fresh or open air treatment of pneumonia has, indeed, happily had the secondary effect of segregating the patients; but I am not aware that it has been advocated for any other reason than the benefit to the patient himself. The employment of the cubicle system is a step, though possibly only a step, in the right direction.

During the days of my old hospital internship, scarcely more than three decades ago, patients in advanced stages of pulmonary tuberculosis were treated in the general wards, often occupying beds next to those convalescing from pleurisy and other respiratory affections. Such a disposition would be almost unbelievable today; and shortly afterward, owing to an appreciation of Koch's demonstration of the infectiousness of tuberculous sputum, such patients were segregated in special wards, and still later in special hospitals. Few infectious diseases are now allowed to remain in general wards. Typhoid fever and pneumonia constitute the most notable remnant of exceptions.

To allow one of the accepted list of quarantinable diseases to remain in contact with a ward or other group of children would be to invoke prompt censure. Not all such cases, however, were formerly considered quarantinable. The matter has been one of slow growth. Naturally, those maladies whose infectiousness was most active and most evident were the first to be so treated; then, one after another, but often at considerable intervals, additions have been made to the list. That pneumonia does not as yet appear among them proves little or nothing.

We may grant that comparatively few adults in good health can be shown to have contracted pneumonia while in close attendance on those ill with the disease; but the case is different with infants and young children, who are rendered especially susceptible by even slight disturbances of the respiratory tract. Measles, influenza and the allied grippal affections, as heretofore stated, lead the list, but do not complete it. Young children have little acquired immunity, and the inmates of children's hospitals and institutions are commonly below par. To allow a pneumonia patient to remain in a measles ward is, to my mind, little short of criminal. But if pneumonia is admitted to be transferable in any types of cases, then nothing short of the most complete protective measures for young children, sick or well, is either logical or justifiable.

In attempting to account for a succession of pneumonias in a group, it is not sufficient to say that each case may have been a former passive carrier. This would be valid only in case different types of micro-organisms were proved to be present in each. Here lies an opportunity for important research. But what is the source of the pneumococci found in our respiratory tracts? How do human beings become carriers? Do these organisms come from space or from other human respiratory tracts, and find a foothold?

If the carrier is a menace both to others and to himself, is it unreasonable to assume that a frank case of pneumonia is an equal or greater menace? Unless we assume the omnipresence of pneumonia organisms in nature, they must be derived from some antecedent contact, direct or indirect. The accepted view appears to be, however, that the active case, the convalescent carrier, and the chronic healthy carrier, are most menacing in the order given.

At present, we cannot in all probability eliminate the pneumococcus carriers—indeed, no attempts have been made thus far to do so; but it does appear humanly possible to limit the formation of carriers and the direct infection of others by isolating pneumonia patients as soon as they are detected. Until further research establishes more definitely the ways in which pneumonia is spread—and I have not here touched on the possibilities of indirect transference—we cannot be certain of all the etiologic factors; but the less we know of a disease, the greater the obligation to exercise every precaution.

It is probably a safe assumption that there are few physicians who, two years ago, having in their own person a simple influenza, would have elected to be transferred to a ward containing patients with influenzal pneumonitis; or who, when their attention had been directed to the possibilities, would put a patient having an uncomplicated case of measles into the same room with a pneumonia patient.

The real question is not whether the case for the infectiousness of the pneumonias is fully proved to the satisfaction of the most skeptical, but whether we are individually to assume the responsibility of permitting exposure to cases of pneumonia which we should not permit to many types of less serious illness,

the latter having been declared quarantinable, while pneumonia thus far has not.

The sad experiences of our recent mobilization camps, and the well known history of primitive or aboriginal communities, serve to remind us that such groups have much of the susceptibility to infections which are ordinarily more or less limited to childhood. This question of the isolation of pneumonia patients has, therefore, a wider application than that of our homes and our hospitals.

We are far from possessing valid proofs that cases of pneumonia may be left with impunity among young children or susceptible adults. By doing so, we assume a risk that conditions, of which we cannot always be immediately cognizant, may at any time greatly augment. Prompt segregation alone eliminates all avenues of danger.

It would therefore appear that the obligation is imperative to anticipate the day—to my mind, not far distant—when the movement to control the scourge of pneumonia may make the retention of such cases in a general ward as repugnant to our medical sense of propriety as the retention of an open case of pulmonary tuberculosis.

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## LACTIC ACID MILK *

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The motive of our study of lactic acid milk was to investigate the reasons for the variations in this preparation of milk, and to devise a means, if possible, to prevent their occurrence. Furthermore, we desired to devise a simple method of preparation that would always insure a uniform product, and one that would remain unchanged, even though it aged.

Particularly when made through the fermentative action of the Bulgarian bacillus, lactic acid milk has been considered efficient to inhibit the action of putrefactive germs in the intestinal canal, and hence to lessen the absorption of their putrefactive toxic products. To the Bulgarian bacillus was given most of the credit for this beneficial result; but according to Herter, Bryce, Mendel, Bastedo and others, the Bulgarian bacillus has no real value in this direction. If this is true, how has lactic acid milk a therapeutic effect?

To aid digestion, hydrochloric acid is the acid of our choice; but it has been stated that other acids can be substituted for it, and that they will produce more or less good results. Consequently, if the fermentative action of the special bacillus, the Bulgarian bacillus, is theoretically correct but practically doubtful, the beneficial results from lactic acid milk must be due largely to the acid. If the results do depend on the acid, they must follow because the acid stimulates the gastro-intestinal function through raising the acidity of the stomach to a point at which it not only aids gastric digestion, but later stimulates the digestive secretions of the upper intestine, when it is poured into the duodenum.

It is questioned, however, whether acids other than hydrochloric acid are aids to digestion. Often the presence of lactic acid in an adult gastric analysis indicates a hypochlorhydria; and if hydrochloric acid is administered, it prevents the formation of lactic acid, which under the circumstances is considered an abnormal acid, an acid disturbing rather than aiding digestion. If this theory, as applied to the adult stomach, is correct, it is not the lactic acid itself which gives lactic acid milk its therapeutic effect.

The question then arises, How does it aid? According to the newer ideas of the gastro-enterologists, it is Meltzer's law of "contrary innervation" that has so much to do with the gastro-intestinal functions. It is agreed, according to this law, that whatever increases the amplifications of the waves of peristalis will, through this increased relaxation and contraction, increase the function of the gastro-intestinal canal.

Following this law, lactic acid may favor the amplification of peristalsis and thereby improve function. Practically, it does seem especially efficient in the very class of cases of infants in which we desire to use lactic acid milk, that is, in those cases that are physically undertone, those with dilated stomachs due to a relaxed musculature.

Lactic acid milk differs from ordinary sour or spoiled milk, because it is a sour, uncontaminated, sterile milk. At the Children's Hospital, for the last eight months, we have been using lactic acid milks in the difficult feeding cases, and have been very much pleased with the results. We are inclined to believe that our results are as good as, if not better than, with the much lauded protein milk.

Protein milk is advised especially for six main reasons: e. g., the high protein with its high calcium; the full fat; the low lactose; the low soluble salts; the fine curd during digestion, and the concentrated food. If our contention is true, it is the lactic acid in the protein milk which is the stimulator of digestion, both gastric and intestinal, and the sterilizer of the intestinal contents.

With our method of mixing, we get four of the points of advantage which are emphasized in protein milk. We can secure a relatively high protein, a full fat, the fine curd during digestion, and the concentrated food. The amount of lactose, which is nearly the same as in sweet cow's milk, may be considered a disadvantage. But this is not a major disadvantage, because lactic acid milks contain only 1.5 per cent. more lactose than does protein milk.

In protein milk, great stress is laid on the decreased salt content. In comparison lactic acid milk does contain nearly twice as much of the soluble salts as does protein milk and less of the insoluble salts, the calcium and magnesium.

In the few cases in which we must use a low soluble mineral element and a high insoluble mineral element, protein milk is without doubt the better food; but the accuracy of the needs of the infant for this chemical relationship of the soluble and insoluble salts has not been demonstrated without question.

In the first place, we use two kinds of lactic acid milk, one made of skimmed milk, and the other of whole milk. This makes the formulas very flexible as regards the use of fat, the tolerance for which is so commonly broken in this class of case. We are likely to start with the skimmed lactic acid milk, and we work it up to the desired ratio with its diluent, or as high as it can be well borne. As the child's digestive tolerance permits, we replace the skimmed lactic acid milk by the whole lactic acid milk.

* Read before the American Pediatric Society, June 1, 1920.

We find Marriott's statement true, that an unexpectedly high ratio of lactic acid milk, especially if it is skimmed, can be used. With this high ratio, we secure a fairly high protein, which is considered so essential.

In order to make the formula smooth, we have mixed the lactic acid milks with barley water. The resulting mixture has an attractive appearance, and we find the barley water to be a great aid in holding the mixture in even suspension. We make the barley water of a strength of from 0.5 to 0.75 per cent.

The great difficulty with any lactic acid preparation is the control of the acidity as the buttermilk ages. If the acidity is too low and if the milk is not clotted in fine curds, it clumps into a large mass when boiled, even though stirred. If the acidity is too high, the infants either refuse or reject it. But the difficulty is how to get that acidity and keep it. We have worked out two simple methods which we hope time will prove to be satisfactory and successful. In both the methods we boil the milk first so as to have an uncontaminated fermentation.

The first method is to warm the milk, which has been boiled and then cultured, and put it away, either in a fireless cooker or the child's ordinary icebox so frequently found in the household. If the cultured milk is put away in the evening at 85 F., in the morning it will be found to have undergone a proper fermentation with an acidity of from 70 to 90. To check further fermentation we put it on ice, or, preferably, rapidly bring it to a boil. I mention rapid boiling, because slow boiling lengthens the period in which the warmth is sufficient to favor fermentation and hence the increase of acidity. During this boiling, active stirring with a Dover egg beater is essential to keep the curds fine and prevent clumping. This boiling renders the fermenting Bulgarian bacillus inert, and leaves a milk sour but sterile: a milk that is very different from a sour milk spoiled by various ferments, and a milk that is probably as efficient as if the Bulgarian bacillus were active.

The second method that we have worked out is still simpler. It is well known that the fermentation of lactic acid milks continues up to a certain point of fermentation, that is, of acidity. At about 60, as measured by decinormal sodium hydroxid solution, spontaneous fine clotting occurs. At about 170 to 190, the acidity destroys or renders inactive the fermenting bacillus, and the process consequently of itself ceases.

We have taken the milks, either skimmed or whole, and in the morning added the ferment (1 ounce of ferment to 31 ounces of milk) and stood them away in a warm place till a convenient time the next morning. Knowing by numerous tests that the acidity has reached about 170 to 190 by that time, we dilute the skimmed or whole lactic acid milk with an equal amount of skimmed or whole sweet milk that has been boiled, and we have the desired acidity of from 75 to 95. Because the acidity is above 60, there occurs a spontaneous fine clotting of the added sweet milks with a resulting homogeneous, smooth, clotted mixture. This mixture of lactic acid and sweet milks is then boiled or not, as we desire. It is then further modified, as the case demands, and put away on the ice. It keeps nicely, changing very little in the following twenty-four hours, the change being much less if boiled a second time.

This is surely a simple method, which can be carried out even in the household of the ignorant. It requires merely the making of a certain amount of whole or skimmed lactic acid milk, to which can be added an equal amount, or more, of whole or skimmed boiled sweet milk. The small clots, which are formed during the process of fermentation, are flocculent in character and are very easily digested. Should the infant reject the lactic acid milk of correct acidity, the curds are small and soft, and show evidence of prompt digestion. To supply the carbohydrate needs we have added corn syrup; first, because of its contained variety of sugars, and secondly, because it is cheap. We have had cultures taken of an unopened can, and have found it germ free.

Our series of cases tested on lactic acid milks has amounted to only about twenty-five, and we may consequently be presuming to make a report on such a small number. Given a mixture of the proper acidity, we find the infants very quickly seem to like it and furthermore, those with rebellious stomachs retain it nicely. The effect on the stools is marked and quickly obtained. The foul, putrefactive odor, so common in this class of hospital case, promptly ceases, and the stools become even, smooth, and of good color.

The infants seem rapidly to become less toxic, as is shown by the disappearance of various signs and symptoms:

1. Their appetites improve, and they take the formula well and are likely to retain it.
2. They soon lose their ashy gray color. Their mucous membrane, especially of the lips, shows a decided betterment in color. This occurs before the gain in weight has been marked.
3. Their temperature becomes more stable, and an early monothermia occurs.
4. They soon become less fretful—in other words, are more happy.
5. Their sugar tolerance seems less easily broken, and gas formation is less likely to complicate the condition.
6. The loss of weight, or stationary weight, is soon likely to be overcome by a substantial weekly gain, and caloric feeding seems easier to reach.

The age of the infant seems to make very little difference with lactic acid milks. Finkelstein does not advise protein milk before 3 months of age, though this rule is not inflexible. But we have used lactic acid milks in the very young with as good results as with older infants. As an example, one of our patients was a premature infant of seven months' gestation, weighing 4 pounds at birth. At the end of its first month it weighed 5 pounds. It was started on its second day of age with a one-half skimmed lactic acid milk. This was gradually raised to a two-thirds mixture of lactic acid milk, which was made of one-half skimmed lactic acid milk and one-half whole lactic acid milk. This is approximately a 2 per cent. fat mixture.

The therapeutic effects of lactic acid milk or buttermilk are too often only superficially understood. The curds formed from it are small and easily cared for. The acidity seems to stimulate both the gastric and the intestinal function, and the sterilization of the protein fermentation of the intestinal canal is marked. This change of intestinal state markedly lessens the absorption of toxic products, and the whole process of metabolism is hence beneficially affected.

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# DIAGNOSIS OF CHRONIC INTRA-OCULAR TUBERCULOSIS *

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Notwithstanding the fact that the ophthalmic literature in the last few years has had many papers on intra-ocular tuberculosis, and many interesting and well worked out cases have been reported, it is not uncommon to meet oculists of more than ordinary ability who say that they have never had a case in their practice. A statement of this character is disquieting to the mind of one, who, for a number of years, has been treating cases diagnosed as such, and it at first causes one to doubt whether the proper diagnosis was made.

I shall therefore make a review of the disease in defense of those who are diagnosing and treating it, and for the encouragement of those who have not found it in their practice.

The first step in the consideration of intra-ocular tuberculosis is to accept as a fact the statement of all practitioners who are treating general tuberculosis that most persons are infected with it during their lives. Different authors vary in their opinion as to just what percentage of the entire population has been infected. Kolmer [1] states that over 90 per cent. of those past their eighteenth year have been infected, while numerous authorities assert that the percentage reaches almost 100.

Many develop a more or less passive immunity which may leave inactive tuberculous foci in the tissues for many years, again to become active or distribute infection to other parts of the body when the individual's resistance is lowered through any cause, such as disease, overexertion or exposure.

Accepting the foregoing as a statement of facts, it follows that each individual for a certain period of his life would be liable to a relighting up of old infected areas, with the possibility of the infection being distributed to new localities. Therefore, we may consider that the person, particularly in early adult life, who has not built up sufficient resistance against active tuberculosis is subject at all times to the disease, both from old and from newly infected areas.

## PATHOLOGY

The healing process which takes place in tuberculosis is most often due to the surrounding of the infected area with a fibrinous exudate, which shrinks, encapsulating the tubercle bacilli, with possibly eventual destruction of the micro-organisms. This area, however, is subject to reactivity, and there exists the possibility of distributing the infection to other parts of the body, no doubt through the blood streams or lymph channels.

MacCallum [2] states that:

> After entering the body the bacilli may be transported by at least four different methods: first, mechanically, along with air, food and secretions; second, by growth through the tissues; third, by way of the lymph channels; fourth, by way of the blood stream.

The first does not enter into the consideration of this paper, and the second only so far as it may cause extension into the lymphatic channels or blood stream.

MacCallum says further, of the third method:

> When the lymph channels are entered by the infection, the bacilli may be carried in the terminal lymphatics, and swept along with the stream until they lodge somewhere, usually in the next lymph node.

Of the fourth method, he says:

> The extension of a caseating process in the walls of a vein or artery is quite common, and a great number of bacilli may be thrown into the blood stream, no doubt in the veins; for by entering the arterial system, they would be carried to the terminals of these vessels, while in the veins they would be distributed through the general circulation.

This is evidently Sahli's [3] belief, for in several places in his work, he mentions the blood stream as a carrier, notably in his consideration of ocular tuberculosis. He refers to the cases of phlyctenular condition of the eye treated with tuberculin, and says:

> The cases mentioned have led me to think that these affections might possibly have a similar origin to the tuberculoids of dermatology. I agree with Wolff-Eisner that these tuberculoids are inflammatory reaction due to the tubercle bacilli, carried to the spot by the circulation. Probably, owing to the strong allergic reaction and hypersensitiveness of the organism, they do not produce actual tubercles, nor are the bacilli increased to a great extent, but only inflammatory reactions are seen.

Stock's [4] experiments, in which he injected a culture of tubercle bacilli in the blood of rabbits, producing lesions resembling chronic uveitis, would go a long way toward confirming the belief that the infection is distributed through the circulation. However, Verhoeff,[5] carrying on animal experiments, differs with him by holding that the infection is not necessarily due to direct metastasis from the blood, advancing the view that tuberculous scleritis and choroiditis are due to an infection from the aqueous through the filtrating angle.

The laboratory examination of tuberculous eyes is fairly well standardized, so that even though many cases are pronounced to be tuberculous by the pathologists when no tubercle bacilli are found, they are warranted in their statements. A general picture of the tissue without the presence of tubercle bacilli has been accepted by pathologists to consist of epithelioidal cells, with the center of the mass frequently occupied by a giant cell.

Tooke,[6] in a recent article, says:

> A demonstration of tubercle bacilli is naturally enough conclusive evidence, but the diagnosis is not necessarily excluded on account of the inability to demonstrate the micro-organism.

Otori,[7] in the examination of one of his cases, stated that the tubercle bacillus was found only in parts of the retina, where there was relatively little change.

It would seem that the mode of transmission was more frequently through the blood stream, no doubt through the veins, which, on account of the thinness of their walls would be more easily penetrated by erosion. In addition to this, the distribution would be much wider through these channels than through the arteries.

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* Read before the Section on Ophthalmology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Kolmer J. A.: Infection, Immunity and Specific Therapy, Ed. 2, Philadelphia, W. B. Saunders Company.
2. MacCallum, W. G.: Text Book of Pathology, Philadelphia, W. B. Saunders Company.
3. Sahli: Tuberculin Treatment.
4. Stock: Arch. f. Ophth. (Graefe's).
5. Verhoeff: Tr. Am. Ophth. Soc. **46.**
6. Tooke, F. T.: Am. J. Ophth. **2:** 395 (June) 1919.
7. Otori: Arch. f. Augenh. **79:** 44.

Naturally, the finding of tubercle bacilli is conclusive evidence in confirming a diagnosis; but the fact that many sections are necessary, and at times the technic is faulty, might possibly account for their absence in numerous cases.

As the disease has a tendency to self-limitation, undoubtedly many of these micro-organisms are destroyed before the stage of enucleation has been reached. However, the microscopic appearance of tuberculous tissue has been recognized so long by the general pathologists that we should have no hesitancy in accepting the diagnosis of tuberculosis when this tissue is found.

I believe that the history of a case is never complete without a testing of the patient with subcutaneous injections of tuberculin. I have this criticism to make regarding the recent article of Tooke's,[6] for in the four cases reported there was only one that had been tested with tuberculin, one other having a positive cutaneous test, which was made after the enucleation.

### CLINICAL DIAGNOSIS

The general character of all tuberculosis is that of slow development, with absence of pain, the disease having gained quite a headway before the person is aware that he has trouble of any kind. There is a general tendency in all tuberculous lesions to hemorrhage, owing to erosion of the vessels.

Localized tuberculosis often has a history of trauma or of disease, leading one to suspect that where there has been an injury, or the tissue is diseased from any other cause, the soil is prepared for planting the tuberculous infection.

This fact may account for the frequency of intra-ocular infection among apparently healthy persons, these cases being analogous to the lymph nodes, which, primarily affected by diseased tonsils, subsequently become tuberculous, and to the joint which becomes tuberculous following a slight injury.

Three of my cases have a bearing on this point: An apparently healthy man, with tuberculous choroiditis, gave a history of a rather severe injury to the eye a year and a half before reporting to me. Another, with choroiditis, who had recently been discharged from the army with full normal vision, had received a slight injury of the eye a few months before. The third patient, having iritis, had an apical abscess of a molar tooth on the same side as the affected eye, which had been in existence for a number of years. The eye cleared very rapidly after the tooth was extracted, but the acute condition recurred about one month later, at which time he gave a positive general, local and focal reaction with tuberculin. I think it is quite possible that the trouble was due to the tooth primarily, with secondary infection of tubercle bacilli.

All tissues of the eye, with the exception of the lens are susceptible to infection, and I agree with Török,[8] who calls attention to the close relationship of the cornea, sclera and uveal tract in this disease, as inflammation of all these three tissues is usually present. There may not be direct bacillary invasion, but I believe there are few cases of any extent in which all the tissues are not more or less changed, some of them possibly by toxins. Therefore, when we have more than one tissue of the eye involved, such as iritis with choroiditis, scleritis with keratitis, or other combinations, we are warranted in suspecting tuberculosis.

8. Török, E.: Arch. Ophth. **48**: 242 (May) 1919.

### DIAGNOSIS

There are certain noticeable changes in this disease, which seem to differ from those produced by other causes, and which I should like to point out for consideration.

*Sclera*—Many cases of scleritis, possibly the majority of them, are considered to be a tuberculous process. The one most typical is that with nodules, or heavy infiltration. At times there is an invasion of the cornea extending in from the limbus, usually tongue shaped and frequently vascularized. The extension over the cornea is frequently quite rapid, and the appearance is usually so typical that one is warranted in starting the treatment without a further investigation as to the etiology.

*Cornea.*—Ellis and Gay,[9] who carried on a satisfactory series of investigations with local applications of dilute solutions of tuberculin in the eye, state that they have arrived at the conclusion that all superficial nebulae and maculae of the cornea are of tuberculous origin. This is a very broad statement, but no doubt they feel warranted in their assertion.

It is true that the cornea is greatly disposed to become cloudy from any tuberculous lesion, usually secondary to a process in some other part of the eye. The types of these lesions are numerous, varying from solitary spots on the clear cornea, with apparently no other sign of activity in the eye, to interstitial keratitis with the cornea entirely cloudy. Other changes in the nature of stripes and punctate formations are seen.

In some of my cases I have found changes in the cornea which seemed to me to be typical of tuberculosis. These were small opaque spots, from 1 to 2 mm. in extent, near the limbus, under the intact epithelium. These spots were rather dense in the center, shading off to the edge until they blended in the clear corneal substance. Their tendency was to increase in size and density until they coalesced, forming one opaque mass, until the patient was fully under the effects of the treatment.

One of my patients had these spots develop on both the nasal and temporal limbi, increasing in size until the cornea became entirely opaque at the margin, extending gradually in a vertical line on each side of the center until they met. The case was one of tuberculous iritis, with tubercles plainly distinguishable in the iris. The cornea entirely cleared under treatment, leaving normal vision. An interesting feature was the fact that the patient had been an inmate of one of the government institutions for the treatment of tuberculosis, and after being under observation for many months without a sign of activity in any part of the body, had been discharged shortly before reporting to me.

"Mutton fat deposit" on the posterior corneal surface is considered by numerous authorities as being of diagnostic value.

*Iris and Ciliary Body.*—According to the literature, the iris is more commonly involved than any other tissue. Lang[10] reports having found 11 per cent. of his cases of iritis due to tuberculosis. Brown and Irons[11] report 8 per cent.

The disease usually comes on slowly. It is frequently hard for the patient to give the exact time of the beginning of his trouble, and as a result the synechiae have been in existence longer and are more firmly fixed.

9. Ellis, H. A., and Gay, H. M.: Lancet **2**: 156 (Aug. 4) 1917.
10. Lang: Lancet, June 23, 1917.
11. Brown and Irons: Tr. Am. Ophth. Soc. **14**.

The character of the tubercle depends on the stage of the disease. In the early stage, the tubercles may be indistinguishable until after a reactionary dose of tuberculin. When they can be seen, they are grayish yellow spots, in my experience found in any part of the iris. I have seen them in the root of the iris at the pupillary margin and half way between. In the latter stage of the disease, after having been under treatment, they are much lighter in color and may exist as a white fibrinous or atrophic spot in the iris for many years; in fact, it is doubtful whether or not they ever disappear.

Knapp [12] mentions heterochromic iritis as one of the results of tuberculous infection. I have only partially tested one of these cases with tuberculin, but this was sufficient to warrant me in investigating other cases along the same line.

*Vitreous.*—Vitreous opacities may be of various types, many of them no doubt the result of intra-ocular hemorrhage. In several cases I have found white fibrinous bodies, irregular in shape, free in the vitreous and at times evidently attached to the retina or retinal vessels, having the appearance of retinitis proliferans.

In considering these vitreous opacities, we should remember that it was with tubercle bacilli that Stroud [13] made his experiments, on which he based his conclusions that there could be a simple hyalitis without involvement of any other part of the eye.

I have recently found in one of my cases, in which there was a positive reaction to tuberculin, vitreous opacities resembling asteroid hyalitis, reported by Holloway [14] and Stark [15] a few years ago.

*Retina.*—With this tissue, the involvement seems to be more confined to the vessels, and there is a tendency to hemorrhage. The picture depends on the stage of the disease. Early, there is a white exudate, frequently of triangular form, at the bifurcation of one of the vessels, with the base in the opposite direction from the nerve. The exudate is fluffy and fine, and deeper in the center than at the edge. As time passes this shrinks, flattens out, and becomes more localized, constricting the vessels. In the older cases, many of the vessels can be seen as a clear white line for quite a distance.

*Choroid.*—The tendency of the affection in this tissue is to become localized more frequently in the areas with the finer vessels, in most of my cases being well forward toward the ora serrata.

An old, slightly pigmented spot, which has apparently healed spontaneously, is due more often to tuberculosis than to any other cause.

The fresh involvement has a white exudate, sometimes very extensive, covering the involved area.

The old lesions are elevated in the center, with less pigment than those produced by other causes. The large, solitary spots are of a grayish appearance, frequently quite elevated in the center, so that they at times could be mistaken for a detached retina or a tumor. The line of demarcation is usually sharply defined between the diseased and the healthy tissue, with a small amount of pigment at the edge, which generally does not surround the entire area. Frequently, apparently healthy retinal vessels can be distinguished, crossing the diseased area.

*Optic Nerve.*—We find no record of a distinguishing feature between neuritis and papillitis, from tuberculosis and that from any other cause. However, I have seen papillitis of several diopters develop following diagnostic doses of tuberculin. Whether this was due to a tuberculous involvement of the optic nerve, or to the tissues surrounding it, or was purely toxic, I was unable to determine. Therefore, I feel that one should ever keep in mind this possibility in giving diagnostic doses of tuberculin when the nerve is not under direct observation. In my case, the swelling subsided under treatment, leaving good vision.

I have in no way tried to describe all the conditions found in tuberculous affections of the different tissues of the eye, but have simply mentioned the appearance of those which seem to be of special diagnostic value.

There are necessarily border line cases hard to distinguish from those produced by other causes; but the conditions I have described are so characteristic that, if found, one is always warranted in suspecting tuberculosis, and in many cases in starting the treatment without further investigation as to etiology.

### TUBERCULIN DIAGNOSTIC METHODS

I believe that practically all tuberculin diagnostic methods for intra-ocular tuberculosis have been discarded with the exception of subcutaneous injection and the cutaneous test. The latter can be used many times to determine the sensitiveness of the patient to tuberculin, before the selection of the subcutaneous dose. In children it may be advisable in many cases to be satisfied with this test alone, especially as at times there will also appear a focal reaction.

We have been taught that, in the subcutaneous administration of tuberculin, we should watch for three reactions. These are thus explained by Kolmer [1]:

> The general reaction, which is due to the effect of the toxin on the body cells, indicated by a sudden rise in temperature of 1 degree or more, not more than forty-eight hours after the injection.
>
> The local reaction, which is indicated by tenderness and redness at the point of injection, owing to the concentration of the poison at this point.
>
> The focal reaction, which is characterized by increased activity and exudate in the infected areas, owing to the fact that the cells about the lesion are more sensitive to the effects of the poison than in any other area, and probably because they are the most concerned in antibody production.

Kolmer [1] states that these reactions may be obtained from any type of tuberculin, and that "after securing a reaction from one type, another reaction can be secured by the injection of another form of tuberculin."

The most popular type undoubtedly is that of old tuberculin, which is almost universally used for diagnostic purposes. There can be no standardized dose for all cases, and it is seldom that any two men agree on the amount to be given.

After a preliminary examination of the blood and urine, and the elimination of the possibility of focal infection, I have the lungs investigated and take the temperature four times a day for at least three days, following which the pupil of the affected eye is dilated, if diagnostic doses of tuberculin are to be given. I roughly divide my patients into four different classes:

1. Those to whom no diagnostic dose should be given. These are the patients who show signs of activity in the lungs sufficient to cause a daily rise of temperature. The diagnosis in these cases is made by exclusion.

2. Those with recent activity in the lungs, but now with normal temperature. These patients are gen-

12. Knapp: Medical Ophthalmology.
13. Stroud: Tr. Ophth. Soc. U. K. **32**, 1912.
14. Holloway, T. B.: Arch. Ophth. **47**: 50 (Jan.) 1918.
15. Stark, H. H.: Arch. Ophth. **46**: 38 (Jan.) 1917

erally started on a combined diagnostic and therapeutic dose of $\frac{1}{500000}$ mg., which is doubled until a reaction occurs. In this class of cases I have had reactions occur with $\frac{1}{50000}$ mg., and in one case with $\frac{3}{10000}$ mg.

3. Those patients who had activity several years before, but who have apparently been well for a number of years. In these cases we can safely begin with an initial dose of $\frac{1}{10000}$ mg., doubling each time until the reaction occurs.

4. Those patients who give no history of activity at any time during their lives. These cases may be approached with greater assurance, so we can select for the initial dose from 0.5 to 1 mg., followed each forty-eight hours by 2, 3 to 5 mg., and so on up to the point of saturation. The greatest amount I have ever given in one investigation was 17 mg.

In addition to the three reactions, the fact that the patient improves with small diagnostic doses of tuberculin is also of value. Several of my patients have been started with an initial dose of 0.01 mg., the second dose being 0.1 mg., and the third dose 1 mg., who showed marked improvement before the full reactionary dose was reached.

The diagnostic value of this method depends on whether or not in using tuberculin we are dealing with a specific protein. Kolmer [1] says:

> The tuberculin reaction is highly specific. Most instances in which positive reaction was observed in the apparent absence of tuberculosis had usually narrowed down to the fact that the lesions were so small or so situated as to escape detection; and, indeed, this has been shown so conclusively by autopsies, that in the presence of a tuberculin reaction, on the autopsy must rest the burden of proof or blame.

There are qualifications in this statement, with explanations as to why some cases with great activity in the lungs do not show a reaction; but they do not enter into the consideration of this subject.

On the other hand, it has been shown by many investigators that tuberculin in healthy persons, even in massive doses, causes no reaction.

There is far greater possibility of a false negative than there can be of a false positive reaction.

There may be a possibility of doubt in a general reaction secured by a large dose of tuberculin, as it is well known that general reactions can be secured by other foreign proteins, both in tuberculous and nontuberculous persons; but with a reaction from a moderate dose, it is safe to say that it is the result of a specific protein. The local reaction is less likely to occur from other foreign protein, while the focal reaction is undoubtedly the result of a specific protein and will not occur from any other cause.

While it has always been considered necessary in the diagnosis of intra-ocular tuberculosis to have the three combined reactions before a positive diagnosis can be made, I myself do not feel that this is true. However, I am always more satisfied when the three occur as the result of the injection, but am willing to accept as positive a well marked focal reaction alone.

I believe that the danger in this method of diagnosis has been exaggerated, provided one selects his cases carefully. The majority of cases are fortunately in patients with no sign of active tuberculosis in other parts of the body. In these cases the danger is slight. The danger to the eye is naturally great if due caution is not used; but when the pupil is dilated, the dose carefully selected and gradually increased, and the eye kept under observation constantly during the administration of the tuberculin, the danger is only slight.

Even patients with a tendency to hemorrhage, I believe, frequently benefit from a marked reaction, as the exudate subsequently shrinks and constricts the vessels involved, thus lessening the danger of a future hemorrhage. However, I am more cautious in handling these cases than others.

I believe that failures in this method are frequently caused by not bringing the patient up to the point of saturation, irrespective of the amount of tuberculin required.

### TUBERCULIN TREATMENT AND RESULT

While it is not the province of this paper to take up the question of treatment of intra-ocular tuberculosis, I do consider that the successful treatment of any disease, particularly along specific lines, is the most certain diagnostic method we have. Therefore, laying aside the method of diagnosis, when we secure a favorable result, it is the only proof necessary that we have been dealing with a tuberculous lesion.

Failure to secure results in suspected tuberculous cases by the administration of tuberculin may be due to several things. The process may have advanced so far before the diagnosis was made that we are dealing with a generally diseased eye, other changes having taken place which render the task of saving it hopeless.

I believe that many times patients would have done better had there been a change made to some other type of tuberculin. My attention has been called to several cases of general tuberculosis in which the patients began to improve immediately after getting under the effects of a different form of tuberculin.

Another source of error is the fact that tuberculin treatment is not continued long enough, and the treatment repeated at intervals for a number of years.

Intra-ocular tuberculosis acts the same as localized tuberculosis in any other part of the body, and will not respond to treatment unless the general health of the patient, particularly any tuberculous lesion of the lungs, is progressing favorably.

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### ABSTRACT OF DISCUSSION

DR. WILLIAM C. FINNOFF, Denver: Tuberculosis has been recognized as the etiologic factor of many of the chronic inflammatory diseases of the eye, and our knowledge of the symptoms and visible changes which take place when the tubercle bacillus—or its toxin—affects the various tissues of the eye is becoming more accurate. Textbooks are lacking in adequate description of these changes, and the student is compelled to consult the current literature. Stock, Tooke and Verhoeff did much to increase our understanding of tuberculosis of the eye by recording their observations after animal experimentation. We should follow our cases closely and carefully, and when possible enucleate the eyes at the time of death for microscopic examination. After excluding the conjunctiva we can roughly classify chronic inflammatory eye diseases into three groups, namely, those due to syphilis, those due to focal infection, and those due to tuberculosis. If the Wassermann reaction is negative, and the lesion shows no improvement under strenuous antisyphilitic treatment, syphilis can be excluded. The exclusion of focal infection is more difficult and involves a thorough examination of the nasal sinuses, the tonsils and adenoids, genitourinary and gastro-intestinal tracts. If the urine is negative and the vessels show no sclerotic changes and the presence of syphilis and focal infection can be eliminated, the condition in all probability is due to tuberculosis. Inasmuch as most persons who reach the age of 18 have had tuberculosis in some form, they have become sensitized to tuberculin. Therefore, a positive von Pirquet reaction or a positive

subcutaneous reaction is of no value as a diagnostic method in the adult. It will only prove that the patient has, or has had, tuberculosis in some form. The only manifestation that is of positive diagnostic value following the subcutaneous injection of tuberculin, is the focal reaction, an intensification or aggravation of the symptoms or of the inflammation at the site of the suspected lesions. The use of tuberculin as a diagnostic measure is to be avoided in tuberculosis of the retinal vessels, because the walls of the retinal vessels are weakened. Tuberculin given in diagnostic doses under these circumstances might result in a focal reaction with extensive exudates and severe hemorrhage with the loss of some vision. One must make the diagnosis of tuberculosis of the retinal vessels from the ophthalmoscopic appearance and the changes which occur in the lesion. The ophthalmologist, if he does not give the tuberculin, should act in an advisory capacity and determine the size of the dose of tuberculin to be used. For the tuberculin to be of any value, the dose should be kept just under the reacting point or be sufficient to produce an evanescent reaction. Tuberculin, if given intelligently is of both diagnostic and therapeutic value.

The point brought out by the essayist that inflammation in the eye resulting from focal infection might lower the local tissue resistance to such a degree that a suitable area is produced for secondary infection by an attenuated tubercle bacillus, is worthy of further investigation.

DR. WALTER R. PARKER, Detroit: A mistake in diagnosis which I made recently taught me a good lesson. A woman, aged 26, had uveitis in the right eye which had existed two years; vision was reduced to light perception. A uveitis developed in the left eye two months before she came under my observation, and vision was reduced to $^{20}/_{40}$, this being a typical case of low grade uveitis. She was given, as I supposed, a careful examination in every way. The various examinations revealed that she had septic tonsillitis and that two teeth were abscessed. The tonsils were enucleated and the teeth were extracted. The woman returned in four months much worse than when she left the hospital. Not until this time had a test for tuberculosis been made. The subcutanous tuberculosis test was positive. She was put on tuberculin beginning with $^{1}/_{10,000}$ mg. The treatment was begun six weeks ago and she is still under treatment. I believe this is a true case of tuberculous uveitis. Whether or not her infected tonsils or the infection from the teeth made her more susceptible to tuberculous manifestation, I am unable to say. One of the most frequent conditions overlooked in routine work is this inflammatory condition of a tuberculous nature. The most characteristic clinical symptom of local tuberculosis is that there is not as much pain as one would expect for the degree of inflammation present. Another clinical observation that has helped me in these cases is that in spite of treatment these patients have not done as well as they should have done had the diagnosis been correct. I believe that every case of keratitis, iritis, scleritis or uveitis which does not respond to the ordinary medical treatment should suggest the possibility of tuberculosis, and every case of recurrent retinal hemorrhage should be regarded as a possible case of tuberculosis.

DR. EDWARD JACKSON, Denver: For a number of years after going to Colorado I believed ocular tuberculosis was very rare. We must accept the statement that a very large proportion of us have been infected with tuberculosis at some time, and in a way that is capable of developing active disease under favorable circumstances. The obstacle to diagnosis is principally that we do not find what we recognize from our textbooks and our student-day observations as the usual signs of tuberculosis. These symptoms are not characteristic symptoms of tuberculosis. A most typical case of eye tuberculosis was that of a perfectly healthy, vigorous young man, who had been examined for life insurance and passed without a question as to his fitness. He suddenly developed a pulmonary hemorrhage. Tuberculosis specialists failed to find a focus of disease in the lung, but the hemorrhage continued for several days. The man developed pneumonia and died. The postmortem examination showed a cavity in the lung the size of my little finger. A section showed the bacilli and all the pathologic changes of tuberculosis. If such a case can occur and go unrecognized ninety-nine times out of one hundred, we are justified in assuming that it is likely to be tuberculosis, even though there have been no previous symptoms traceable to that cause. If there is any lesion in the eye that might be caused by tuberculosis, tuberculosis should be borne in mind, and if, as Dr. Parker says, the case does not yield promptly to treatment along other lines, it should be examined carefully by specific tests.

DR. HARRY S. GRADLE, Chicago: A young woman with a chronic unilateral uveitis, had a 3 plus Wassermann reaction, for which she had been treated for several months. She had had several infected teeth removed. I gave her an injection of 0.1 mg. of tuberculin, but she did not respond. She did respond, however, to 0.3 mg. with a rather unusual reaction. In addition to the local and general reaction, the injection, which was made in the right arm, produced a very acute exacerbation at the site of the injection in the left arm, a rather unusual reaction which, as far as I know, has never been described. Too many men are apt to give one injection and if that is negative, they consider the case is not tuberculosis. It is essential to pursue your diagnostic injection clear through a series, preferably in the hands of an internist who can control the general reaction rather than an ophthalmologist who is more concerned with the focal reaction.

DR. HIRAM WOODS, Baltimore: Dr. Gradle spoke of discouragement because you get too little reaction or none at all on first trial. I want to speak of the other side, where you get scared out of your wits because you get too much reaction. I am perfectly willing to accept Dr. Jackson's final remark, that you want to go on with your therapeutic test under the conditions he described, but I do want to warn against diagnostic enthusiasm. Some years ago I saw a woman with a moderately acute choroiditis in one eye, and an atrophic spot in the other. She was given about 0.4 mg. tuberculin for diagnostic purposes. She had $^{20}/_{30}$ vision in the one eye in spite of the choroiditis; she got a focal reaction. Her vision went down to $^{10}/_{200}$ and never got any better. I have seen that happen also in a case of peripheral choroiditis, but fortunately it did no harm. Theobald Smith laid down certain definite rules which are of great help in keeping us out of trouble. One is that tuberculous cases have "Hands off!" written all over them when there is fever or when there are marked evidences of acute, active inflammatory processes going on. Another is that nobody can tell just what is going to be a reactive dose for any individual. Another is that in the mixed infections, syphilis and tuberculosis, for instance, you are very apt to stir up the latent power of some outside infection other than tuberculosis. We should not give tuberculin on our own responsibility. When the clinical facts are, negative Wassermann, no improvement under medical treatment, no pain, a low grade inflammatory trouble, we should suspect tuberculosis. Secure the aid of an internist who understands the disease; work with him; use tuberculin from a small dose up, and when you get a reaction stop. Do not push a case over the line in the formation of antibodies. Nature is at work probably and can do better work than you can do.

DR. GEORGE S. DERBY, Boston: I have seen one case where both eyes were lost and I believe absolutely as the result of too energetic use of tuberculin. In a second case one eye was lost and had to be removed and I am not sure but the other eye is by this time gone also. Listening to a discussion of this sort is apt to give men who have not had much opportunity to come into contact with tuberculous disease of the eye the idea that the whole treatment of tuberculosis of the eye lies in the use of tuberculin. The whole treatment of tuberculosis of the eye is the treatment of general tuberculosis. Tuberculosis of the eye is a chronic condition that lasts usually over a period of months; the average case perhaps has a duration of eight months, and it is of the greatest importance that these patients should be watched most carefully as to general hygiene, and then if you want to use tuberculin do it with the cooperation of someone who has had experience in its use, and do it with a great deal of caution.

DR. HARRY H. STARK, El Paso, Texas: Referring to Dr. Finnoff's statement regarding the retinal vessels, I believe that at certain stages a reaction is really a good thing, as the exudate which is thrown out subsequently shrinks, thus preventing a further hemorrhage. The pathology, as I see it, at the first stage of the disease, is a para-arteritis. When this condition exists, I believe there is very little danger of hemorrhage. Atypical cases are frequently due to tuberculosis, that is, cases which we have treated for years as syphilitic because we found no other etiology to account for them.

Only a few years have elapsed since we ceased to believe that tuberculosis existed only in the lungs. Even at the present time we are looking at the question through the wrong end of the telescope. We are sending patients to the chest men, who report back "lungs negative," and to the roentgenologist, who says "lungs negative." This means absolutely nothing, except that we still are using a crude method of determining the presence of tuberculous foci in the body. I was pleased to hear the reports from Dr. Parker and Dr. Gradle. It shows perfectly the point I made —that is, the possibility of previous focal infection preparing the soil for a secondary invasion of tubercle bacilli. This is the only explanation for the occurrence of so many cases of intra-ocular tuberculosis in the eye of an apparently healthy individual. I agree with Dr. Woods that the reaction can frequently be too strong. I have tried to eliminate the danger of giving too large a dose by dividing the cases into four groups and regulating the initial dose accordingly. While it is still a rough method, it is an improvement in the technic. It may be better to determine the sensitiveness of the patient by the von Pirquet test, or to use a very small initial dose of tuberculin, say 0.0001 mg. I believe that all injections, both diagnostic and therapeutic, should be made with the eye constantly under the observation of the oculist.

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## ETHYLHYDROCUPREIN IN DISEASES OF THE EYE*

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In 1911, Morgenroth and Levy[1] reported their experiments with quinin derivatives. They seem to have reported the first use of ethylhydrocuprein hydrochlorid for pneumococcus infections, and were able to kill the pneumococcus not only in the test tube but also in the living mouse. The drug was then employed in the treatment of pneumonia in man; but because of the many cases of amaurosis, it was not universally adopted. This complication has been reported by several observers. At the present time, it is seldom used in pneumonia. With few exceptions, all American reports have been concerning the effect of this drug on serpiginous ulcers of the cornea. This report is based on its continued use since early in 1914 in more than 1,000 cases.

Ethylhydrocuprein hydrochlorid is a white crystalline powder, a methyl derivative of quinin, fluorescent, neutral, bitter, and soluble in the proportion of 1 to 10 of water. In the test tube it has a killing effect on the pneumococcus, but penetrates the medium only 0.2 mm. It is more irritant than quinin, more anesthetic and more toxic. Locally it has been used in water, in oil and in a solution of red cells, in strength varying from 1 to 5 per cent. The frequency of instillation has varied from a single application of a 5 per cent. solutjon directly to the infected part to a 1 per cent. solution every hour in the conjunctival sac. Some have reported a local necrosis, particularly of the cornea, after the direct application of the 5 per cent. solution; others have failed to get it; I have never observed it. All agree that after the use of ethylhydrocuprein hydrochlorid for a considerable period, tolerance is established, and that if the drug be continued, it has a stimulating effect on the microorganism. A long series of experiments shows the ordinary reaction time of the first irritation to last from two to six minutes. This reaction bears no relation to age, sex or condition of the eye; for example, a high strung child of 5 years complained for only two minutes, whereas a plethoric man was bothered for six minutes. All complain of photophobia, which may last from two to thirty seconds. The conjunctival congestion, which may be slight and disappear in a few minutes, may be intense, lasting for hours. The corneal anesthesia has usually been present as soon as the original irritant symptoms have subsided, and may last for several days. After one drop, this anesthesia is usually sufficient to enable one to use the tonometer without discomfort to the patient. We have noted no change in the pupil after a single instillation; but not uncommonly, prolonged use causes a slight dilation without a tendency to increased tension. When the drug is in contact with the iris or the lens, it produces neither increase in pain nor change in the clearness of lens. Although the watery solution is the one most commonly used, some claim to have better effect in oil, particularly Morgenroth and Ginsberg,[2] who noted anesthesia of the cornea a moment after using a 4 per cent. solution in olive oil.

In trying to determine some reasons why failures have been reported after using ethylhydrocuprein hydrochlorid, Dr. Anton S. Schneider carried out the following experiments:

1. Pneumococcus Types I, II, II, IV.
2. Ethylhydrocuprein, $C_{20}H_{23}N_2O.H$.

Dilutions: 1:100, 1:1,000, 1:10,000, 1:100,000, 1:400,000, 1:800,000, 1:1,600,000.

EXPERIMENT 1.—Dextrose broth cultures of pneumococcus type.

(*a*) (I) + 2 c.c. 1:100; (II) + 2 c.c. 1:100; (III) + 2 c.c. 1:100; (IV) + 2 c.c. 1:100 allowed to remain five minutes, and then some plated and inoculated for twenty-four hours.

(*b*) Same except solution was allowed to remain thirty minutes.

Result: No growth after twenty-four hours' incubation either in five minutes' exposure to the drug or thirty minutes' exposure.

EXPERIMENT 2.—(*a*) (1) + 2 c.c. 1:400,000; (2) + 2 c.c. 1:400,000; (3) + 2 c.c. 1:400,000; (4) + 2 c.c. 1:400,000 five minutes' exposure to drug.

(*b*) Same with thirty minutes' exposure.

Result: Diminished or inhibited growth after five minutes' exposure. After thirty minutes' exposure, more marked growth on plates.

EXPERIMENT 3.—Dextrose broth tubes + 2 c.c. of 1:100 and 1:400,000 incubated twenty-four hours.

Result: In 1:100 dilution, culture remained the same as when the drug was added. In 1:400,000, a marked increase in growth so that the tube became quite cloudy.

Inference: There must be a direct proportion between the amount of drug used and the number of organisms.

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* Read before the Section on Ophthalmology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Morgenroth and Levy: Chemotherapy of Pneumococcus Infection, Berl. klin. Wchnschr. **48**: 1560, 1929, 1979, 1983, 1911.

2. Morgenroth and Ginsberg: Anesthesia with Quinin and Its Derivatives, Berl. klin. Wchnschr. **49**: 2183, 1912; ibid. **50**: 8, 1913; Mechanism of Corneal Anesthesia, ibid. **50**: 315, 1913; ibid. **50**: 343, 1913; Centralbl. f. prakt. Aerzte **37**: 315, 1913.

EXPERIMENT 4.—Action of ethylhydrocuprein on blood.

A. Whole blood suspension in physiologic sodium chlorid solution:

(*a*) 1 c.c. suspension + 10 to 12 drops of 1 : 100 dilution.
(*b*) 1 c.c. suspension + 10 to 12 drops of 1 : 1,000 dilution.
(*c*) 1 c.c. suspension + 10 to 12 drops of 1 : 10,000 dilution.
(*d*) 1 c.c. suspension + 10 to 12 drops of 1 : 100,000 dilution.
(*e*) 1 c.c. suspension + 10 to 12 drops of 1 : 400,000 dilution.
(*f*) 1 c.c. suspension + 10 to 12 drops of 1 : 800,000 dilution.
(*g*) 1 c.c. suspension + 10 to 12 drops of 1 : 1,600,000 dilution.

(*a*) This shows a ball formation of all elements of the blood, leaving a clear fluid surrounding it. After approximately five minutes' definite hemolysis is seen which later becomes more marked and reduces the size of the "ball." After twenty-four hours, complete hemolysis takes place.

(*b*) This shows no tendency to ball formation or hemolysis. There is perfect suspension of cells.

(*c*) This shows only slightest tendency to ball formation, with an apparently normal looking suspension above.

(*d*) This shows definite ball formation.

(*e*) (*f*) and (*g*) These are the same (*d*).

B. The same results obtained with 5 per cent. cell suspension as used in the Wassermann reaction.

C. The same result obtained with defibrinated blood.

Conclusion: There must be some chemotaxis in the strong dilutions and in the weak ones so that dilutions for animal inoculations must be those causing no reaction.

EXPERIMENT 5.—Animal inoculation.

Ten c.c. of a 1 : 1,000 dilution were injected intravenously. No bad effects were noticed either in the animal or at the site of inoculation.

Twenty-four hours later a second injection of the same dose and strength was given. There was a marked chill, rapid respirations and trembling, lasting for one-half hour.

Twenty-four hours later a third injection was given with no outward effects.

Blood at this time was taken to make microscopic agglutinations. The results of this experiment were negative and seem to indicate the absence of any antibody production.

EXPERIMENT 6.—As some writers have asserted that ethylhydrocuprein, when combined with certain of the common drugs, particularly atropin, loses its effect, the experiment outlined in the accompanying tabulation was performed.

EFFECT OF ETHYLHYDROCUPREIN COMBINED WITH OTHER DRUGS

| Control | Growth |
|---|---|
| Broth culture pneumococci with ethylhydrocuprein | |
| 1:800,000 | + |
| 1:600,000 | + slight |
| 1:800,000 and boric acid | + |
| 1:600,000 and boric acid | + |
| 1:800,000 and atropin | + |
| 1:600,000 and atropin | + |
| 1:800,000 and argyrol | + |
| 1:600,000 and argyrol | + |
| 1:800,000 and cocain | + |
| 1:600,000 and cocain | + |

It is evident, therefore, that boric acid, atropin, argyrol and cocain may be used with ethylhydrocuprein, as they do not lessen its action.

This is further shown by the report of Dr. Arthur Knudson, associate professor of biologic chemistry of the Albany Medical College:

A 1 per cent. solution of ethylhydrocuprein hydrochlorid was mixed in equal proportion with a 1 per cent. solution of atropin sulphate, boric acid and zinc sulphate, respectively, and no apparent chemical or physical change was noticed in the solutions. The ethylhydrocuprein hydrochlorid solution and atropin sulphate solution were mixed in proportion of 2 : 1 and 1 : 2, respectively, with no changes. Likewise, similar proportions of boric acid and zinc sulphate were tested with no apparent changes.

These results would indicate that ethylhydrocuprein hydrochlorid is compatible in all proportions with atropin sulphate, boric acid and zinc sulphate.

It would seem, therefore, that there is no chemical reason for believing that atropin lessens the efficiency of the drug, which has numerous clinical indications for its use.

A low grade blepharitis, with slight reddening of the lid margin and a few adherent scales which has seemingly resisted all other treatment, is often entirely cured within a week by using the 1 per cent. aqueous solution three times a day. It should be remembered that in referring to cases of blepharitis or conjunctivitis, it is presumed that the other causes of the disease, such as refractive error and nasal obstruction, have been treated.

Purulent conjunctivitis is so often improperly diagnosed as gonorrheal conjunctivitis without smear or culture that any treatment claiming results must be based on bacteriologic examination. It is necessary, therefore, for the proper observation and recording of all conjunctival discharge, that at least a smear be made before treatment is started.

The acute pneumococcus conjunctivitis characterized by slight injection of lid and globe conjunctiva with a few subconjunctival hemorrhages, slight watery secretion with some mucus, and considerable ocular discomfort responds very rapidly to the drug when used in 1 per cent. solution every two hours. The purulent type, both acute and chronic, responds readily to treatment. Gradle [3] has reported favorably on its use in conjunctivitis.

Puscariu [4] has had excellent results in gonnorheal conjunctivitis. I have treated only three cases. Two of these patients made a quick recovery, but the third was not cured until silver nitrate was applied to the conjunctiva. Wyler's [5] experience was unfortunate in that the patient had serious corneal involvement.

Vernal conjunctivitis, of the type characterized by extreme photophobia and itching, will at times show more improvement by the use of ethylhydrocuprein every six hours than by any other drug, even including epinephrin chlorid. It should be understood that when tolerance is established, another form of treatment must be substituted.

Several have reported good results in the treatment of trachoma. These have been in those cases in which the granulations were large and succulent, with congested conjunctiva, much discharge, vascularization of the cornea, and many minute ulcers. In a number of these, the conjunctival congestion has been greatly lessened within twenty-four hours, the ulcers have started to heal, and several patients have been restored to full occupational function within ten days, after having been out of work for months. Just as we know that arsphenamin hastens the cure of some cases of syphilis, so this drug has favorably influenced many seemingly stationary cases of trachoma and frequently has made more radical treatment unnecessary; and in none has healing been delayed. A number have been so treated successfully after operation had failed.

3. Gradle: Newer Therapy of Pneumococcus Infections of Eye, München. med. Wchnschr. **41**: 2076, 1914; Clinical Experiences with Ethylhydrocuprein, Klin. Monatsbl. f. Augenh. **55**: 229, 1915; Pneumococcus Conjunctivitis, ibid. **55**: 362, 1915.

4. Puscariu: Treatment of Gonorrheal Conjunctivitis with Ethylhydrocuprein, Clin. ophth. **20**: 357, 1914; Klin. Monatsbl. f. Augenh. **53**: 342, 1914; Berl. klin. Wchnschr. **52**: 85, 1915; Ann. Ophth. **25**: 784, 1916.

5. Wyler: Ethylhydrocuprein in External Diseases of the Eye; Pneumococcus Infection, Lancet **114**: 579, 1915; Ophthalmology **12-13**: 741, 1915-1916; Ann. Ophth. **25**: 103, 1916.

Dacryocystitis is often poorly treated. This infection is opening an ever enlarging field for this treatment, and it is becoming less common to resort to operation without the proper exhibition of this drug. I have seen acute suppurative dacryocystitis, with marked distention of the sac, surrounding redness of skin and profuse purulent discharge, permanently cured within four days by the simple use in the culdesac of a 1 per cent. solution of ethylhydrocuprein every two hours. Such an experience should convince one that some of the operations on the lacrimal apparatus are not only unnecessary but absolutely unjustifiable. I have further seen chronic dacryocystitis with almost constant sac swelling and abundant purulent discharge cured within five days.

The proper relief of the primary causes of the condition, such as ethmoiditis, frontal sinusitis or simple hypertrophy of the turbinates, must always be part of the treatment. I do not wish to be understood as saying that chronic dacryocystitis based on definite duct stenosis, granulation tissue within the sac or extensive nasal bone destruction will be cured by the use of this drug; but all will be gratified by the frequent rapid reduction of the purulence of the discharge. If one finds that there is a decrease in the discharge for two, three, four or even five days, followed by a return of pus or an increased mucopurulent secretion, one will know that the drug will not give the desired effect and must be discontinued, although one finds that the pneumococci have been destroyed by it.

In treating corneal ulcers I fear that some fail to recognize the different types, and that not a few treat all in the same way unless destruction is rapid. They then become alarmed and immediately use some of the tissue destroyers, such as phenol (carbolic acid), iodin, the galvanocautery or silver nitrate. A smear or culture should be taken from all ulcers. We know that the pneumococcus ulcer is destructive; but with this drug it loses its terror, and usually the corneal ulceration does not progress. Contrast this with the former understanding of sepiginous ulcers, in which, despite the most vigorous treatment, the cornea often sloughed, and large hypopyon developed, with perforation of the cornea and even deep infection demanding enucleation. All will agree that anything which lessens the severity of the disease is well worth considering. A treatment that not only modifies the disease but actually cures it promptly and effectively with marked lessening of time and with conservation of vision must be accepted by all; and those who carefully follow this will agree that it is worthy of continued use.

The corneal ulcers following the entrance of a foreign body, showing the ring of grayish yellow infiltration, can be easily cured by ethylhydrocuprein within a few days. The severe ulcer with deep undermining yellowish margin with exudate on the posterior surface of the cornea, beginning hypopyon, intense injection of iris and marked globe congestion, if treated every two hours with a 1 per cent. solution will, within twenty-four hours, show lessened infiltration; and within seventy-two hours, in the usual case, it will show absence of hypopyon, beginning healing of the ulcer, marked disappearance of all symptoms, and eventually a scar not greater than the actual loss at the time treatment was started.

In phlyctenular diseases, the effect has been a lessening in the lid spasm without curing the condition. I have used the drug in interstitial keratitis of the tuberculous and syphilitic type, without improvement.

Infection of the corneal wound following cataract extraction responds rapidly to this treatment. Ellett and Kraupa [6] have reported excellent results. Recently, in consultation, I saw a severe infection of the cornea, following a cataract extraction, with infiltrated iris, clouded aqueous and intense bulbar congestion. With the use of ethylhydrocuprein every two hours, the cornea was completely cleared and the infiltration absorbed. The patient, however, died as a result of uremia.

To speak of an indefinite group of symptoms as responding to a certain treatment is unscientific; but we have all seen patients who, after the most careful refraction and the removal of every outside irritation, still complain of photophobia, itching, with burning and smarting of the lids. After other things have failed, the use of one drop of the 1 per cent. solution of this drug, three times a day, has resulted in surprising cures.

## SUMMARY

Ethylhydrocuprein hydrochlorid, when given in sufficient dose, is a pneumococcus destroyer; in smaller doses, an inhibitor, and in still smaller, a real excitant, tending to increase the pneumococci.

Although it is an ocular anesthetic, it causes no permanent clouding of the cornea.

It can be combined with atropin without loss of bactericidal action.

The best results are secured only by the frequent exhibition of a fresh solution of the drug, at least every two hours in the beginning of the severe infections.

Too long continuance produces a tolerance and frequently makes the condition for which treatment was started worse.

It has been used with success in blepharitis, acute and chronic pneumococcus conjunctivitis, gonorrheal conjunctivitis, vernal conjunctivitis, dacryocystitis, corneal ulcers and phlyctenular disease.

## CONCLUSION

A more extensive use of the drug is urged, in view of the fact that if the few rules herein reiterated are followed, all will find that ethylhydrocuprein hydrochlorid is a most valuable aid in curing ocular infections that formerly were considered most serious.

344 State Street.

## ABSTRACT OF DISCUSSION

DR. HARRY S. GRADLE, Chicago: Morgenroth was the first to propose the use of ethylhydrocuprein. Its use in ophthalmology first came from Goldschmidt in 1913, and since then it has become widely spread. Dr. Bedell spoke of the tolerance for the drug acquired by the organism. I question that. To my mind it is a chemical change in the drug itself. After the use of the drug for four or five days in some resistant conditions, the disease came to a standstill, showing there was no further influence obtained from the solution used; but on substituting a fresh solution a rapid change in the condition was observed. That led me to think that it was not tolerance of the drug, but a chemical change in the drug itself from standing. This is particularly true when the drug is used in ointment form. Ointment should not be used more than three days before a new lot is prepared. The use of the drug in gonorrheal inflammation has been very unsatisfactory in my experience. In one chronic case of gonorrheal conjunctivitis I used three instillations of ethylhydrocuprein which produced an enormous edema of the conjunctivae and lids so that the eyes could not be opened and ice applications were

6. Kraupa: Prophylaxis of Corneal Ulcers of Miners, Wchnschr. f. Therap. und Hyg. d. Auges **18**: 254, 1915.

necessary. I thought little of it at the time, but on repeating the use of the drug some weeks later I obtained the same results. In xerosis of the conjunctiva or the cornea the drug is of great value. It seems to have the same effect on the xerosis bacillus as on the pneumococcus.

DR. EDWARD C. ELLETT, Memphis, Tenn.: It has been my unfortunate experience to see corneal ulceration in gonorrheal ophthalmia usually progress to destruction of the eye, but in one case the ulceration was arrested under this treatment and the eye saved. In corneal ulceration due to other than pneumococcus or gonorrheal infection, it has seemed to be of value. It does not appear to be an anesthetic, on the contrary, the application is quite painful. In view of the difficulty of obtaining the drug at times, it is well to remember that quinin hydrochlorid has been proposed as a substitute. It is used in 1 per cent. solution in the same way as ethylhydrocuprein. It is cheaper and is said to cause less itching and other subjective disturbances. Other soluble salts of quinin, in addition to those mentioned, have long been employed in the eye as an antiseptic.

DR. JAMES M. PATTON, Omaha: A number of years ago Dr. Gifford and I began the use of ethylhydrocuprein. We found that in spite of using a fresh solution in cases of undoubted pneumococcus origin certain patients did not respond as they should. Then we began to apply the powder direct to the surface of the ulcer, and found that in those cases we were able to get the improvement which we had not been able to get from the fresh solution. This powder must be applied carefully on a small applicator and thoroughly massaged into the surface of the ulcer, especially at the advancing margin. Dr. Bedell speaks about the slight penetrating power of this drug, and it is possible that the massage with which we have applied the powder may account for the increased efficiency of the treatment. The only sign that may be called untoward is that occasionally there is a small amount of desquamation of the epithelium. In no case in our experience has it produced harmful results; the epithelium is quickly restored and the transparency of the cornea has not been impaired. We have found this method beneficial in violent cases where the ulcer has advanced in spite of usual treatment. We have not had any experience in the use of this drug in acute dacryocystitis.

DR. WILLIAM ZENTMAYER, Philadelphia: Some years ago I reported a series of cases of pneumococcus ulcers treated with this drug and my results were very favorable. I have used the drug since and have no reason for changing my original opinion as to its value. Particularly noteworthy is the fact that the resulting scar has been very much less than that obtained by any other form of treatment heretofore used. I have heard many adverse reports also. There must be something wrong in the technic or something else to account for this. If the virtue of the drug is that it is a specific for the pneumococcus, we are asking too much to expect the instillation of a 1 or 2 per cent. solution, two or three times a day, to be effective. To be of value it should be brought constantly in contact with the organism, therefore my plan has been to instil into the conjunctival sac every two hours a 1 per cent. solution, and apply to the ulcer itself, three times a day, a 2 per cent. solution. The hourly instillations are kept up throughout the night. In dacryocystitis my results have been good. We can hardly expect, however, to cure or to get immediate results from its use in acute conditions because the inflammation has spread outside the sac itself.

DR. LEWIS H. TAYLOR, Wilkes-Barre, Pa.: What do you mean by a "fresh" solution? Must it be fresh every hour, every day or two, or once a week?

DR. HARRY H. STARK, El Paso, Texas: I have always felt that the specific qualities of ethylhydrocuprein depended on the quinin. In the army, when we could not obtain the ethylhydrocuprein we used quinin sulphate put in solution with dilute sulphuric acid. We treated forty patients with apparently very good results. Eventually, we changed the solution to the more soluble bisulphate to see if it would give the same result, but I left the service before we could carry on further experiments.

DR. LEE M. FRANCIS, Buffalo: Attention should be called to recent reports in regard to the contraindication for the use of ethylhydrocuprein in connection with atropin.

DR. WILLIAM C. FINNOFF, Denver: In a case of acute conjunctivitis in which a gram-positive diplococcus resembling the pneumococcus was found, a 1 per cent. solution of ethylhydrocuprein was ordered to be used every two hours following the cleansing of the eye with boric acid solution. Two days later the lids were greatly swollen and the man's suffering was increased. He had an urticaria covering the lower lids, the side of the face, and the back of the hands, and he complained of severe headache and a slight ringing in the ears. He asked me if there was any quinin in the medicine, and informed me that he was very susceptible to that drug and could not take it internally. The ethylhydrocuprein was discontinued and argyrol was given in its stead. The swelling of the lids cleared up rapidly, and the skin rash disappeared. I feel sure this was a case of intoxication from the quinin in the ethylhydrocuprein. I do not remember ever seeing such a case reported.

DR. ALLEN GREENWOOD, Boston: I rather deplore Dr. Bedell's effort to ascribe quite so many cures to ethylhydrocuprein. Perhaps many of the diseases of the exterior portion of the eye may be cured by ethylhydrocuprein, but it seems wiser not to be too dogmatic in our expressions in regard to the effect of drugs. May be ten years from now we will have the use of ethylhydrocuprein on its proper basis. I have no doubt that Dr. Bedell's paper will stimulate all of us to use the drug more freely and compare it with other drugs of similar nature.

DR. ARTHUR J. BEDELL, Albany, N. Y.: I do not claim that all patients are cured. I offer this treatment to you as a suggestion for the amelioration of symptoms in some intractable conditions. Ethylhydrocuprein is not to be accepted as a general cure-all. Dr. Gradle made a very important suggestion, the frequent changing of the solution. I had felt that tolerance was established when the eye would not respond and am delighted to know that it is lessened action of the drug. The reaction that Dr. Gradle and Dr. Finnoff spoke of I have seen in three cases, although not as extreme as in Dr. Finnoff's case. A single drop has caused extreme edema in several cases; many were tried several times with the same effects. In relation to Dr. Ellett's criticism, in my paper I particularly call attention to the irritation that follows the instillation and that the corneal anesthesia results. Dr. Patton speaks of the use of the powder directly on the ulcer. That is added proof of the penetrating power of the drug. Dr. Taylor asks what a fresh solution is. That varies with different workers. Dr. Gradle believes a solution is fresh when it is made every five days. I have considered it to be so from seven to ten days, but I will adopt Dr. Gradle's suggestion and make it five days. Dr. Stark refers to the action of quinin and ethylhydrocuprein. Ethylhydrocuprein has a more destructive power than quinin. Dr. Francis calls attention to the contraindication for the use of atropin. Our experiments show that atropin and some of the common drugs we use are compatible with ethylhydrocuprein.

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**Culture and the Practice of Medicine.**—It is certain that true progress in medicine can only come through the continuous application of the scientific method; but when this method is carried to the patient, if it is to be thoroughly effectual, it must be tempered by a spirit which science alone cannot give. Such a spirit embraces a love of humanity, a wise toleration of ignorance, a broad understanding of the lives of divers persons, a controlling influence which curbs or stimulates according to need. The list could be enlarged until it included all the qualities which best fit a man for a life of service to his fellows. Great care is needed here or the service will be given consciously with a consequent fall in value. In approaching every case the consciousness should be fully occupied by the scientific method, the rest being at least subconscious. Unless this relation is preserved the patient is deprived of the full fruits of scientific resources, for the conscious mind will have enough to do in grappling with this aspect.—*Brit. M. J.*, Aug. 7, 1920.

# EPILEPSY, AND CERTAIN TYPES OF EPILEPTIFORM ATTACKS

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Some weeks ago there appeared a paper,[1] the gist of which was a warning against the adoption of new methods of treatment in epilepsy, when those methods have no better foundation than some unproved novel theory of the cause of that disease. This short essay is intended both as a warning against making the diagnosis of epilepsy in a given case for no better reason than that the person who is ill has had a series of convulsive attacks, and as a plea for the more comprehensive study of patients, from the laboratory as well as from the clinical standpoint.

A paper written with this aim in view may seem superfluous, but every neurologist has seen patients who had been treated for months and even years as epileptic, when in fact they were suffering from different conditions; and all because they had never had a really thorough examination. It does not require a vivid imagination to picture the harm that can be done by that sort of thing in many cases.

Of course, nothing like a full discussion of epilepsy, (and by that term I mean only the so-called "idiopathic" form) and of all the pseudo and symptomatic epilepsies can be gone into here. I shall only attempt to give, first, the briefest sort of outline of the present day views of its causation, and then an equally short summary of the points of differentiation between the condition itself and the convulsive attacks, sometimes extending over a period of years, which are due to certain other disease processes.

No clinical entity older than epilepsy is known to medicine, and none whose etiology has been the subject of a wider range of speculation. Even within the last five years it has been regarded, on the one hand as caused by the absorption of toxic products from the intestinal tract, and, on the other, as a psychogenic condition brought about by a conflict between the patient's repressed character trends and the circumstances of his or her conscious life, and hence as amenable to psychanalysis. This idea was advanced in 1915, but I do not know whether or not its author still holds to it.[2] The latest view that I know of is that put forward by two Danish writers,[3] who draw an analogy between epilepsy and tetany, and suggest that the former disease may, like the latter, be due to a deficiency in the parathyroid glands. They base their conclusions on the finding of a great increase in the ammonia content of the blood of patients before an attack.

The consensus of modern opinion, however, is that epilepsy is primarily the result of a true degenerative constitutional instability or hyperirritability of the cerebral motor cortex, which renders its victims liable to attacks of profound unconsciousness, accompained in the major type by motor explosions, under the influence of stimuli, internal or external, that would not so affect a normal person. I shall not take up the theories advanced to account for the so-called psychic equivalents or the petit mal seizures. The incidence of recoveries of epileptics under the usual treatment of the disease, which aims at the twofold object of removing or minimizing the stimuli and reducing the assumed nervous hyperirritability, is fairly direct evidence in support of this view, which is also borne out by most of the late statistical studies of which I have knowledge. In this connection I might mention a clinical study of epilepsy that I undertook in the Neurological Dispensary of the Johns Hopkins Hospital in 1916. Owing to my entry into service in the following year, the work had to be abandoned. So far as it had been carried on, however, it showed three things: (*a*) A majority of the cases in the series came from definitely neuropathic families; (*b*) there was a higher percentage of mental deteriorates among such cases than among those coming from untainted stock, and, (*c*) measured by intelligence tests, the deteriorates in the former group graded lower than did those in the group having clear family histories.[4] These facts seem to me to uphold still further the hypothesis of a constitutional degenerative state of the central nervous system as the ultimate cause of epilepsy. Of course, it is still an open question whether the cortical degeneration and glia proliferation occasionally found in epileptic brains at necropsy represent the pathology of the disease per se, or are the result of the attacks.

So much for the theories as to the etiology of epilepsy. From a list of the conditions that I have known to be confused with that disease, I have selected cerebral syphilis of the vasculomeningitic type, general paresis, brain tumor, hyperthyroidism and multiple sclerosis as pathologic processes whose nature and whose rôle in the production of the supposed epileptic attacks should always be recognized if the patients are properly gone over.

If the pathology of cerebral syphilis is remembered, it is easy to see how epileptiform seizures can be symptomatic of that condition. They occur in those cases in which the diffuse gummatous meningitis has affected the membranes of the convexity in the motor areas; and, as would be expected, they are usually of the jacksonian type. Generalized convulsions, however, do take place. They differ from those of true epilepsy in that the attacks of the latter disease, which begin with focal symptoms or are limited to one side of the body, naturally always involve the same muscle groups. The convulsions of cerebral syphilis, on the other hand, are characteristically variable in their mode of onset. They may start at one time, for instance, in an arm, and at another in the face, or perhaps in an opposite extremity. This is because of the fact that the meningeal lesions may be subsiding in one place while progressing rapidly in another. At some stage of the disease, also, involvement of the basal meninges will surely bring out other symptoms in the form of paralysis of one or more of the cranial nerves. Finally, the increased cell count and protein content of the spinal fluid, and the probably positive Wassermann reaction in both the blood and the spinal fluid, will aid in establishing the correct diagnosis. It almost seems as if a mistake could not be made in such cases; yet a short while ago I saw a woman of 35 who had been treated for nine months as a true epileptic.

1. MacRobert, R. G.: Fits and Fallacies, J. A. M. A. **74**: 1000 (April 10) 1920.
2. Clark, L. P.: The Nature and Pathogenesis of Epilepsy, New York M. J., Feb. 27 to March 27, 1915.
3. Bisgaard, A., and Nørvig, J.: Regulation of Neutrality in Epilepsy, Hospitalstidende **63**: 49 (Jan. 28) 1920.
4. Stuart, D. D. V., Jr.: A Clinical Study of Epilepsy: Preliminary Report, South. M. J. **9**: 767 (Sept.) 1916.

Besides her convulsions she showed a left third nerve weakness that had not been noted. Her blood and spinal fluid picture confirmed the clinical opinion in her case as soon as examined; but it is likely that after the lapse of nearly a year, degenerative brain changes had set in which would prevent the institution of treatment for the real condition from having its desired effect.

Epileptiform attacks, sometimes focal and sometimes generalized from the beginning, are frequent in general paresis. Often enough they are the first noticeable evidence of anything wrong; and they may precede the mental symptoms by long intervals of time, though a careful examination will usually show some of the physical signs of the disease. Here, again, blood and spinal fluid tests will reveal the true state of affairs. Since, however, the pathology of general paresis is a true parenchymatous degeneration of the brain tissue, which does not respond to antisyphilitic measures, delay in starting treatment in a paretic who has been labeled epileptic is not so serious a matter as is loss of time in some of the other conditions mentioned.

Brain tumors, cortical or deep seated, may give rise to convulsions with loss of consciousness. Naturally, if a cortical growth affects a motor area, it virtually always causes definite focal symptoms; but a neoplasm anywhere in the brain may produce generalized attacks that can be explained only on the ground of irritation due to the increased intracranial pressure. Slowly growing tumors may exist for years with convulsive seizures as their only obvious symptom, unless the patient is given a careful and competent neurologic study.

Epileptic-like attacks may occur in cases of hyperthyroidism, and may appear before the signs of thyroid intoxication, as ordinarly recognized, are at all prominent. This is especially interesting in view of the theory of Bisgaard and Nørvig, mentioned above, as to the etiology of true epilepsy. Of course it may be said that the thyroid disease merely furnishes the stimulus which acts as the exciting factor in a potential epileptic. I myself, however, feel that the attacks are simply toxic convulsions, such as happen in uremia, for instance. In the cases that I have seen, treatment of the thyroid condition was promptly followed by cessation of the supposed epilepsy. I doubt whether an outspoken case of exophthalmic goiter would go unrecognized for long, but the masked forms certainly do. In all such, the test for epinephrin hypersensitiveness and the determination of basal metabolism are invaluable aids.

Lastly, disseminated sclerosis, as a rule, through irritative involvement of the motor tracts as they pass down through the pons and medulla, may occasionally give rise to epileptiform attacks. If the disease had its starting point in that locality, such attacks may be a very early symptom; and, since multiple sclerosis is essentially chronic, it may be a long time before other frank signs show themselves. Serology does not offer much help in this disease, but a survey from the neurologic standpoint will always bring to light something in the way of evidence besides the seizures: cranial nerve disturbances; beginning ataxia of the extremities; areas of diminished pain, touch and temperature perception, and the like. This is understandable from the nature of the process going on. It is hardly possible to conceive of a solitary sclerotic focus producing only an irritative motor lesion with resulting convulsions. The foci, as the name indicates, are multiple and scattered throughout the brain and cord.

In conclusion, I wish to say that all the convulsive attacks mentioned may exactly simulate true epilepsy. They may be ushered in by aurae, the unconsciousness may be so deep as even to bring about abolition of the pupillary light reflex, there may be loss of sphincter control, and so-called postepileptic phenomena may occur. The point I wish to emphasize here is that observation of the convulsions alone, even when they appear to be typical and even if repeated many times, is not sufficient to warrant the positive diagnosis of epilepsy.

I might sum up my remarks in one sentence: It is unsafe to assume that any patient is a true epileptic until that patient has had the thorough going over that he or she is entitled to; and until, by this means, other convulsion-producing diseases have so far as possible been eliminated.

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# THE COMPLEMENT FIXATION REACTION IN TUBERCULOSIS

## REPORTING SIX THOUSAND FIVE HUNDRED REACTIONS *

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Much water has passed under the bridge since Caulfield's article [1] on this subject in 1911, but the stream has not increased in clarity as fast as it has grown in volume. It is, therefore, necessary that reports be continued and discussion kept up until all useless ideas are sedimented and we can clearly see bottom.

In 1917, one of us [2] reported our first 500 reactions, with preliminary conclusions. Since that time, we have made 6,000 additional reactions, maintaining an open mind to the diverse statements appearing in literature, and drawing definite conclusions only after a critical study of our own results. We wish, at this time, to make a statistical report of the entire 6,500 reactions, and to discuss briefly the two or three fundamental points in dispute regarding this test.

TABLE 1.—RESULTS OF SIX THOUSAND FIVE HUNDRED COMPLEMENT FIXATION REACTIONS FOR TUBERCULOSIS

| | No. | Per Cent. |
|---|---|---|
| Clearly negative | 2,078 | |
| Inconclusive (over 50 per cent. hemolysis) | 1,027 | |
| Total negative | 3,105 | 48 |
| Moderately positive (from 25 to 50 per cent. hemolysis) | 1,344 | |
| Strongly positive (no hemolysis) | 2,051 | |
| Total positive | 3,395 | 52 |

In Table 1, we give the general results on these reactions, from which it will appear that 48 per cent. were negative and 52 per cent. positive. From our roentgen-ray records and sputum examinations, and from his-

* Read before the Section on Pathology and Physiology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Caulfield: J. M. Research **24**: 101 (Jan.) 1911; abstr. J. A. M. A. **57**: 540 (Feb. 8) 1911.

2. Boynton: Southwestern Med. **2**: 9 (Jan.) 1918.

tories and clinical records of physicians sending the serums to us, we have obtained data which permit us to classify 3,168 of these reactions with respect to tuberculosis, as follows:

Class A: From patients proved to be tuberculous, 1,103 serums.

Class B: From patients clinically tuberculous, but not proved, 521 serums.

Class C: From patients in whom tuberculosis was suspected, but not definitely diagnosed, 822 serums.

Class D: From patients not examined for tuberculosis, 554 serums.

Class E: From patients examined and found clinically nontuberculous, 168 serums.

The reactions given by the serums in these various groups are shown in Table 2.

TABLE 2.—CORRELATION OF CLINICAL FINDINGS WITH COMPLEMENT FIXATION REACTIONS

| Class | No. of Serums | Positive | | Negative, No. |
|---|---|---|---|---|
| | | No. | Per Cent. | |
| A | 1,103 | 865 | 78 | 238 |
| B | 521 | 336 | 64.6 | 185 |
| C | 822 | 303 | 37 | 519 |
| D | 554 | 183 | 33 | 371 |
| E | 168 | 7 | 4.2 | 161 |

Of 1,103 serums from patients definitely proved to be tuberculous, 865, or 78 per cent., gave positive reactions. The 238 negative serums in this group represent twenty-six moderately active, seventy-three arrested, and eighty acute or general tuberculosis, with no detailed information on fifty-nine serums.

Of 521 serums from patients with clinical tuberculosis not confirmed by sputum or roentgen-ray examination, 336, or 64.6 per cent., gave positive reactions. This class includes more cases of arrested disease than does Class A, since the disease was never so far advanced; but we have not undertaken to search these out.

Of 822 serums from patients in whom tuberculosis was suspected but not established, 303, or 37 per cent., gave positive reactions. This class will include patients with foci too small for definite demonstration by physical or roentgen-ray examination.

Of 554 serums from patients who were not examined for tuberculosis, 183, or 33 per cent., gave positive reactions. This, as would be expected, approximates the percentage in the previous group.

Of 168 serums from patients in whom examination revealed no evidence of tuberculosis, seven, or 4.2 per cent., gave positive reactions.

These figures speak for themselves, and we will pass to the discussion. In reviewing the literature, we find the three main points still in dispute to be concerning (*a*) the antigen, (*b*) the specificity of the reaction, and (*c*) the clinical value of the results.

## THE ANTIGEN

Miller[3] and Moon,[4] in 1917, reviewed the various antigens then in use, and this has recently been brought down to date by Petroff.[5] Most of the workers in this country have preferred bacillary suspensions or emulsions of some kind. In Caulfield's[1] work a watery suspension was used. Stimson,[6] Miller,[7] Moon,[4] Fleisher,[8] Wilson,[9] Burns and his colleagues,[10] Stivelman,[11] Stoll and Neuman,[12] and Pritchard and Roderick,[13] used some form of bacillary suspension or emulsion. Craig,[14] Petroff[15] and Bronfenbrenner[16] have been the best known advocates of tuberculin or extractive antigens, and Petroff,[17] later recommended an antigen made by boiling the bacilli in glycerin, making a suspension in a glycerin extract. The Corper[18] antigen is an autolysate of a bacillary suspension. Fleisher's antigen differs from Miller's by being triturated in water and suspended in phenol-salt solution. Cooke's[19] antigen for experimental work consists of bacillary mass extracted with alcohol, dried and suspended in phenolized physiologic sodium chlorid solution. Wilson's antigen is similar,[9] being extracted with alcohol and ether, dried and suspended in physiologic sodium chlorid solution.

An impartial observer of the reports of work done with these antigens finds little to influence a choice, provided the whole bacillus is used and thoroughly broken up. Whether this is done by trituration, dry (Miller) or wet (Fleisher), by boiling in glycerin (Petroff), by dissolving off the wax and suspending (Cooke, Wilson), or is allowed to occur by lysis (Corper), seems to make little difference. In a study which compared the antigens of Corper, Wilson and Petroff, Young and Givler[20] found little difference in efficiency, and we believe their results would have been the same had they included Miller's antigen. The reactions here reported were done with the Miller antigen, prepared from tubercle mass containing eight strains. We have become convinced that the longer the mass is ground, the more efficient will be the antigen, and we now grind the bacilli with salt for four hours. We have also noticed an increase in efficiency with aging of the antigen emulsion, possibly owing to lysis of the bacterial protoplasm. We are, therefore, willing to grant that if bacilli can be more thoroughly broken up by other methods than trituration with salt, the antigen should be better; but our results compare favorably with those published from other sources, so that we have not yet seen reason for changing. None of the emulsions made by us have shown the close margin between antigenic strength and anticomplementary effect, complained of by Corper and Sweany.[21] Our antigen dose is usually from 0.05 to 0.1 c.c. of the emulsion, and we have never found anticomplementary effect in doses smaller than 1 c.c.

In the tests, we use two strengths of antigen, usually 0.1 and 0.25 c.c. We have read our results according to four degrees of hemolysis in the two strengths of antigen; namely, (*a*) strongly positive, (*b*) moderately positive, (*c*) inconclusive, and (*d*) negative. In this report only the first two, never more than 50 per cent. hemolysis in the larger antigen dose, are classed as

3. Miller: J. Lab. & Clin. Med. **1**: 816 (Aug.) 1916.
4. Moon, V. H.: A Further Consideration of Complement Fixation in Tuberculosis, J. A. M. A. **71**: 1127 (Oct. 5) 1918.
5. Petroff: Am. Rev. Tuberc. **3**: 683 (Jan.) 1920.
6. Stimson: Bull. 101, Hyg. Lab., U. S. P. H. S.
7. Miller, H. R.: The Clinical Value of Complement Fixation in Tuberculosis, J. A. M. A. **67**: 1519 (Nov. 18) 1916.
8. Fleisher and Ives: J. Lab. & Clin. Med. **3**: 302 (Feb.) 1918.
9. Wilson: J. Immunology **3**: 345 (Sept.) 1918.
10. Burns, N. B.; Slack, F. H.; Castleman, Philip, and Bailey, Karl: Application of the Complement Fixation Test to Tuberculosis, J. A. M. A. **68**: 1386 (May 12) 1917.
11. Stivelman: Am. Rev. Tuberc. **3**: 546 (Nov.) 1918.
12. Stoll, H. F., and Neuman, Lester: The Complement Fixation Test in the Diagnosis of Tuberculosis, J. A. M. A. **72**: 1043 (April 12) 1919.
13. Pritchard, J. S., and Roderick, C. E.: Complement Fixation Test for Tuberculosis, J. A. M. A. **73**: 1879 (Dec. 20) 1919.
14. Craig: Am. J. M. Sc. **140**: 781 (Dec.) 1915.
15. Petroff: Am. Rev. Tuberc. **1**: 33 (March) 1917.
16. Bronfenbrenner: J. Lab. & Clin. Med. **3**: 50 (Oct.) 1917.
17. Petroff: Am. Rev. Tuberc. **2**: 523 (Nov.) 1918.
18. Corper: J. Infect. Dis. **19**: 315 (Sept.) 1916.
19. Cooke: J. Infect. Dis. **25**: 452, 474, 493 (Dec.) 1918.
20. Young and Givler: Am. Rev. Tuberc. **3**: 476 (Oct.) 1919.
21. Corper, H. J., and Sweany, H. C.: Complement Fixation Tests in Tuberculosis, J. A. M. A. **68**: 1599 (June 2) 1917.

positive, the inconclusive reactions being grouped with the negative. This is done, in spite of the observation that these are often weakly positive, the patients giving more positive reactions if retested. We use a mixed complement, titrated against a fixed dose of high titer amboceptor and a fixed quantity of sheep cells. Our technic is identical with that employed by us in the Wassermann reaction, except for the antigen. All serums are inactivated and water bath incubation is used, a parallel Wassermann reaction being done on each serum.

### SPECIFICITY

Bronfenbrenner [16] called attention to the fact demonstrated by him and other experimenters that complement fixing antibody would be produced by animal inoculation with the tubercle bacillus, or by tubercle antigen in the human being. Cooke,[19] in experimental work, found that tuberculous serums would bind complement only with antigens of acid fast bacteria; therefore, bacilli of leprosy and tuberculosis were the only micro-organisms pathogenic to human beings which would give positive reactions with such serums. Petroff's [5] latest contribution concludes that the fixation in tuberculosis is more specific for that disease than the Wassermann is for syphilis; that the positive reaction is due to the antibodies of the tubercle bacillus and that, therefore, these organisms must exist in the body in a state of activity.

To cite, as a proof against the specificity of the reaction, the occurrence of positive fixation in patients without evidence of tuberculosis is an appropriation of infallibility on the part of clinicians to which they are not entitled. When 20 per cent. of the men passed as nontuberculous by a competent review board can be shown by the roentgen ray to have tuberculous lesions, as one of us [22] demonstrated in recent draft work, we cannot accept the absence of physical evidence of tuberculosis as a valid argument against the specificity of the positive complement fixation for this disease. The best proof of such specificity is the demonstration, in the hands of competent observers, that the reaction in

TABLE 3.—RELATION BETWEEN POSITIVE WASSERMANN REACTION AND TUBERCULOSIS FIXATION

| Wassermann Reaction | Tuberculosis Fixation Positive | Negative |
|---|---|---|
| ++ and +++ | 325 | 228 |
| + | 105 | 89 |
| Total | 430 | 317 |

proved tuberculosis will approach 100 per cent. positive, and in the clinically nontuberculous will approach 0 positive. When the reaction fails to attain the perfect 100 per cent. and 0, respectively, if this is regarded as an error, it should be charged against the clinical diagnosis and not against the laboratory method, just as is done with the Wassermann.

In regard to possible cross fixation in syphilitic and tuberculous serums, Bronfenbrenner's simple demonstration that, where there is double infection, each reacting substance can be absorbed from the serum without affecting the other, still stands undisputed. Miller, Stoll and Neuman, Corper, von Wedel,[23] Petroff, Craig and Burns found that there was no cross fixation between syphilitic and tuberculous serums. The conclusions of Moon, Corper and Sweany, and Snow and Cooper [24] that syphilitic patients would give nonspecific fixation for tuberculosis is not capable of proof, since it would be necessary to show that the patients are absolutely nontuberculous, which is obviously impossible. In our work we have found that the two fixations are entirely independent. In this series of 6,500 reactions, there were 747 giving positive Wassermanns. The relation between the positive Wassermann serums and the tuberculosis fixation is shown in Table 3, while Table 4 shows a comparison of tuberculous and nontuberculous patients in relation to the Wassermann reaction.

Table 3 shows that, in 430 serums, both reactions were positive, while in 317 the Wassermann was positive and the tuberculosis fixation was negative. Of the positive Wassermann cases, 40 per cent. gave negative

TABLE 4.—WASSERMANN REACTION IN TUBERCULOUS AND NONTUBERCULOUS PERSONS

| Wassermann Reaction | Classes A and B | Classes C, D and E |
|---|---|---|
| Positive | 110 | 163 |
| Negative | 1,514 | 1,381 |
| Total | 1,624 | 1,544 |

tuberculosis fixation, so closely approximating the 48 per cent. of the entire series which gave negative tuberculosis fixation that we can safely conclude that in this series syphilis did not affect the tuberculosis fixaon. Table 4 shows that, of 1,624 serums from patients definitely or clinically tuberculous (Classes A and B), 110, or 7 per cent., gave positive Wasserman reactions, and of 1,544 serums from patients chiefly nontuberculous (Classes C, D and E), 183, or slightly over 10 per cent., gave positive Wassermann reactions. We cannot, therefore, admit that tuberculosis will give false positive Wassermann reactions, even with cholesterinized antigen, as claimed by Snow and Cooper.[24] Our + Wassermann reaction represents complete inhibition with cholesterinized antigen and hemolysis with acetone insoluble extract; but since we secured only 7 per cent. of positive Wassermann reactions of all degrees out of 1,624 tuberculous serums, we certainly cannot regard this as an objectionably high percentage.

### CLINICAL APPLICATION

The positive reactions in classes C, D and E represent the weakness of this laboratory aid in the eye of the clinician. This weakness cannot be surmounted by any refinement of reagents or technic, since it adheres to the fundamental pathology of the disease; and the sooner clinical pathologists cease trying to overcome an inevitable weakness and emphasize the many advantages of the reaction, the sooner shall we have the attentive ear of the clinical world. Every attempt to place the complement fixation for tuberculosis on a par, clinically, with the Wassermann reaction leads us further into error. So far as percentage of results is concerned, it is already on a par or ahead of the Wassermann reaction; so far as specificity is concerned, this is more firmly established in regard to tuberculosis fixation that in the Wassermann test. A positive Wassermann reaction is usually accepted as proof of syphilis; a positive tuberculosis fixation reaction just as certainly means tuberculous infection; but the comparison can go no further, owing to the fundamental pathologic and clinical differences in the two diseases. Syphilis is first a localized lesion, suddenly

22. Watkins, W. W.: Am. J. Roentgenol. **6**: 283 (June) 1919.
23. Von Wedel: J. Immunology **3**: 351 (Sept.) 1918.
24. Snow and Cooper: Am. J. M. Sc. **152**: 185 (Aug.) 1916.

and inevitably invading all parts of the body through the blood. A small chancre is just as dangerous and produces just as severe secondary and tertiary lesions as a large one. Therefore, the positive Wassermann reaction carries no indication to measure the size of the initial sore or count the spirochetes incubating there, but calls for immediate and intensive treatment, regardless of symptoms. On the contrary, the positive tuberculosis fixation reaction carries exactly the indications mentioned; that is, to ferret out the lesion and measure its size and activity, because a large focus is of clinical significance while a small one may be negligible. Since tuberculosis is a localized disease, spreading slowly by way of the lymphatic stream, with a persistent tendency to spontaneous arrest, we must have definite clinical evidence that the focus is damaging the general health, or is threatening to do so, before the positive fixation reaction can have clinical significance. The reaction indicates activity in a tuberculous focus, but the difference between pathologic activity and clinical activity, which Brown and his colleagues [25] have recently discussed, must be appreciated when interpreting this reaction. We believe with Petroff [5] that scrupulous attention to technic in the hands of highly trained workers is essential to the best success, but that no modification of antigen or technic will enable clinical activity to be differentiated from simple pathologic activity by complement fixation.

We have become firmly convinced that one of the most valuable features of this reaction is the negative test in a case of proved tuberculosis. If the conception of the reaction is correct, that it is a biochemical titration of tuberculous antibody, then the result should be very instructive to the physician. A patient with an active tuberculosis and insufficient antibody to bind complement should be regarded as in a state of exhaustion of his immunity processes. The quoted exceptions of patients with positive reactions who died soon afterward are beside the mark.

Most tuberculous patients die from streptococcic or other mixed infections, from nephritis, diabetes, toxic hearts, hemorrhage or other complications. Such patients can give positive tuberculosis fixation even when moribund, since this reaction has reference to tuberculous antibody only and a patient can, conceivably, have a marked resistance to the tubercle bacillus and still be dying from some complication. Patients with acute, florid or generalized tuberculosis, without mixed infection, or those whose lack of resistance is shown by extension of this infection to bones or abdomen, are the type which gives negative reactions. Of our 238 negative reactions in proved tuberculosis (Table 2), eighty, or 34 per cent., were of this type.

On the other hand, the observation that patients lose their positive reaction and become negative as their disease becomes arrested is of distinct clinical value in checking the progress of arrest. Here, as with the Wassermann test, repeated observations are necessary, because the antibody content of such patients will fluctuate greatly. Of the 238 negative reactions in proved tuberculosis, seventy-three, or 30 per cent., were in arrested cases.

We find, therefore, in proved tuberculosis that only eighty-six out of 1,103 serums gave negative reactions which were not explained by the character of the disease, and, if we accept Cooke's and Bronfenbrenner's interpretation of the negative reaction, we are justified in concluding that these eighty-six patients, also, by their negative reactions, were given definite warning of a low specific resistance. We have repeatedly observed this failure of antibody (negative reaction) precede by several months the development of new active areas in the lungs, or have noted its occurrence in patients examined at the end of a long railroad journey, returning to positive after a week or two of rest in bed. On the other hand, we have watched the reaction fade from strongly positive to moderately positive, and finally become negative as the disease became arrested.

Whether it is positive or negative, therefore, the clinical significance of the result is to place an increased responsibility on the physician, making all the more essential an intensive study of the history, symptoms and general condition of his patient. If he is looking for relief from such responsibility and a short cut to diagnosis, the clinician will find neither in this reaction. If, however, he is earnestly seeking every possible fact in regard to his patient and intends to make an intelligent application of the result, based on a knowledge of tuberculous pathology, he will find in the complement fixation test a procedure of real and definite value.

## CONCLUSIONS

The Miller antigen is serviceable, practical and efficient for the complement fixation test in tuberculosis.

The reaction is specific for tuberculosis and, when positive, should be interpreted as indicating tuberculosis of some degree of activity. When the Wassermann and tuberculosis fixation reactions are both positive, they should be interpreted without relation to each other.

The positive fixation reaction can be interpreted as indicating tuberculosis, either active at the time, or recently active. The focus may or may not be of clinical significance, which fact must be determined by other means.

The negative fixation reaction indicates either absence of infection, excessive activity of the disease, exhausting the antibody, or arrest of the disease with spontaneous disappearance of antibody no longer required.

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## ABSTRACT OF DISCUSSION

DR. WARD BURDICK, Denver: I have used the antigens of Gray, Craig, Besredka, Calmette and the partial antigens of Much, as well as the bacillary emulsions used by Drs. Watkins and Boynton. My observations correspond with theirs. The bacillary emulsion is the most specific antigen. It contains only ground bacillary bodies, suspended in salt solution. I can also verify the statement that the longer the bacilli are ground, the better the antigen. Complement fixation in tuberculosis, using this antigen, is of marked value in the diagnosis and prognosis of the disease. A positive reaction means active tuberculosis. I think the icebox method of incubation increases the value of this test, although I have not tried it. How soon do you read the tests?

DR. W. H. HARRIS, New Orleans: It is necessary to be very careful in considering a negative reaction as false, inasmuch as even at the postmorten table the question of ascertaining the presence of small lesions is sometimes difficult. There may be very small foci. One makes two or three sections into a gross, boggy lung with no lesions demonstrated. At the postmortem table, with the aid of the roentgen ray, Opie has shown that lesions may be located that may otherwise be overlooked. Some years ago, in connection with leprosy studies, I carried out a very considerable number of

25. Brown, Lawrason; Heise, F. H.; Petroff, S. A., and Sampson, H. L.: A Preliminary Study of Clinical Activity, Am. Rev. Tuberc. 3: 612 (Dec.) 1919.

complement fixation tests on leprosy patients and on animals that had been immunized by whole bacilli antigens and Gay's modification of the Besredka method. I was attempting to demonstrate specific antibodies for certain cultures isolated from the leprosy lesion, as there are eight or ten different cultures which are thought by different workers to be the Hansen bacillus. I was not able to determine any specificity. I employed quite a number of acid-fast antigens, such as the Moeller drug bacilli, the various tubercle bacilli (avian, bovine and human), the various leprosy strains, Smegma bacillus, timothy hay bacillus, etc. I was unable to point out any specificity for the different acid-fast cultures. I obtained group-binding for acid-fast bacilli as a whole. Did you employ any saprophytic acid-fast bacilli as controls? Cooke recently carried out some serologic observations on acid-fast bacilli from an experimental standpoint as well as in leprosy and tuberculosis. Cooke arrived at the same conclusions I did some years ago, i. e., while there is some specificity for acid-fast bacilli as a group, there is no specificity for the individual strains. One can obtain an acid-fast fixation as differentiated from nonacid-fast, but there is no specificity for the different varieties. It would be of interest in the complement fixation test in tuberculosis to employ control antigens of other acid-fast bacilli and also nonacid-fast antigens.

DR. F. M. JOHNS, New Orleans: The complement fixation test in tuberculosis is in its experimental stage. We would be more apt to come to some satisfactory conclusion if there was some such place as the Hygienic Laboratory to prepare a definite, uniform antigen that other experimenters might use, either in their work or to check up their own antigens. In this way we might arrive at conclusions as favorable as the essayists have brought out. For several years I have been working with various antigens and find that some will give practically identical fixation as the usual cholesterin fortified antigen, while others give a more or less specific reaction in tuberculosis.

DR. W. C. JONES, Birmingham, Ala.: Did you find any limit of time at which the antigen became weak or inert? Does it ever lose its strength or become entirely inactive?

DR. FRANK J. HALL, Kansas City, Mo.: Have you done any work with complement fixation meningeal tuberculosis?

DR. W. W. WATKINS, Phoenix, Ariz.: In tuberculous meningitis, we do the test as a routine. We so tested all spinal fluids received at the laboratory until we had satisfied ourselves that the test would not be positive in syphilitic spinal fluids or in ordinary meningitis. We never secured a positive reaction in a spinal fluid, except in one instance, that the patient did not follow the regular course of tuberculous meningitis. We had one positive spinal fluid. The child went on to complete recovery from the meningitis. This must have been a technical error; at least the clinical diagnosis was changed when the patient recovered. We have never made an antigen which weakened before we used it, so I do not know how long it would keep its strength. We recently made up a large quantity (two liters) and may be able to determine this point before this is used up. I think that any antigen is satisfactory if the whole bacillus is used. I do not think the important point is the antigen, but a proper understanding of the significance of the test. So far as laboratory results are concerned, the results are as good as they are with the Wassermann test, but as long as the clinician applies them as he does the Wassermann test, he will not be wholly satisfied with his work. Dr. Cooke found that the leprosy bacillus and certain nonpathogenic acid-fasts would bind tuberculous serum. We have not done any of this experimental work.

In regard to Dr. Burdick's question: our technic is just exactly like the Wassermann, except for the antigen. We incubate the same length of time and read at the same time, frequently in the same rack as the Wassermann tubes. That may be an error; some workers contend they should be read earlier and others say they should stand a while. We prefer to keep the technic the same as the Wassermann technic. We are just adopting the icebox technic for our Wassermann tests, and will run both reactions by that method. Dr. Burdick said a negative reaction means nothing. I do not think he means that the way it sounds; I think he means the same as the Wassermann negative. If we consider that a patient either has tuberculosis or has not, a negatitve reaction certainly means something in a pathologic sense. Our attention was first called to its significance by tests of tuberculous patients just arrived in Phoenix after a long railroad journey. Many of them give negative reactions, although evidently actively tuberculous. After a few days' rest the test becomes positive. Their immunity processes were exhausted along with their physical strength.

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# VENIPUNCTURE IN THE TREATMENT OF CERTAIN DISEASES OF THE SKIN

## ITS VALUE AS AN OCCASIONAL ADJUVANT *

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Bloodletting is probably the oldest therapeutic measure known. Its origin is lost in antiquity. While it was practiced by the Egyptians, even as far back as 2500 B. C., it did not attain prominence until the hippocratic era. Very little is found in the literature on venesection in relation to its use in dermatology. Hippocrates, who was the first to describe accurately the indications for phlebotomy, used this method in the treatment of leg ulcers. Daniel Turner, of the College of Physicians, London, a contemporary of Dr. William Dawes, wrote a treatise on "Diseases of the Skin," the first edition of which was published in 1712. In this interesting work, the author describes a considerable number of varied dermatoses in which he recommends phlebotomy. He states particularly that in pruritus bleeding is generally necessary, and also speaks very favorably of its use in urticaria. In view of our present knowledge, it is interesting and rather amusing to note that all of his patients with ringworm of the scalp and alopecia prematura were intensively bled. This is entirely comprehensible in view of the fact that orgies of bloodletting prevailed at the time. In spite of this, however, the value of the method in the treatment of certain diseases of the skin was well recognized.

In the Sydenham Society translation of Rayer's great work on dermatology, under date of 1835, we find this paragraph:

> When eczema is acute and the pruritus exceedingly troublesome, and the inflammation runs high, it may be necessary to abstract blood once or oftener. I have had the occasion to prove the utility of bleeding in a number of cases, even in chronic eczema. When one bleeding has been followed by a notable improvement in the symptoms, it is commonly an inducement to repeat the operation after a few days have elapsed.

Rayer also bled in psoriasis, and states that he frequently made experimental bleedings in other diseases of the skin.

Biett and Cazenave, contemporaries of Rayer, also recommended venesection in certain cases of skin disease. Erasmus Wilson, in the earlier editions of his textbook, advocated topical bleeding (leeches and

* Read before the Section on Dermatology and Syphilology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

scarification) in acute eczema in suitable subjects. Milton, in his book on "Diseases of the Skin," states that in cases of prurigo, Hunt bled to faintness, a practice often followed by great improvement in the eruption and speedy relief from the pruritus. The same author states that he himself used the method only to a limited extent. He did not consider the results encouraging, though the method had been strongly recommended by Sir William Jenner, Hunt and Bazin. Hunt, in discussing the value of bleeding in skin disease, states that "no other satisfactory mode of treatment has yet been matured." He enthusiastically recommends it for prurigo, psoriasis and eczema. He cites a case of prurigo in a woman, aged 54, from whom in a little more than six months he had abstracted 85 ounces of blood. At one time her pruritus kept her awake all night, and the eruption was greatly inflamed. Hunt removed 13 ounces of blood, and from that time there was a sudden and permanent improvement, the patient ultimately recovering entirely. A patient with a very extensive case of psoriasis, with large acutely inflamed and scaly plaques, consented to lose blood; 16 ounces were taken from the arm. Four days later, the patches had greatly faded and were smooth and denuded of scales. Two patients with eczema seemed to have improved materially after venesection.

Bloodletting in diseases of the skin may be said to have slumbered until a decade or so ago, when it was revived as a preliminary to the practice of saline intravenous infusion in the treatment of dermatitis herpetiformis and other pruriginous dermatoses. After being in use for a number of years, it seems to have been abandoned. Generally speaking, the results from this method were not encouraging, and when good results were reported no credit was given to the preliminary abstraction of blood. The injection of autoserum in the treatment of certain diseases of the skin has somewhat recently been brought forward. With this method, approximately 200 c.c. of blood are withdrawn at intervals of from five to seven days, in order to inject the requisite amount of autoserum. The method was first employed by Spiethoff. Later Gottheil and Satenstein reported good results in about twelve cases of psoriasis, in all of which the serum treatment was followed by daily inunctions of a weak chrysarobin ointment. The authors discuss the possibility of the good results being due to the bloodletting alone, but in their conclusion state that they do not believe the benefits of the procedure can be ascribed to it alone. They refer to an interesting experience of the late S. Weir Mitchell, who early in his career was left in sole charge of a very severe case of psoriasis; not knowing exactly what to do, he put the patient to bed, bled her every day, and to his surprise and great satisfaction the eruption entirely disappeared.

Howard Fox treated twenty-eight cases of psoriasis with autogenous serum, and states that from the injections alone he was unable to see any decided effect on the lesions. To get good effects from the method, chrysarobin ointment had to be employed. While it was the author's opinion that bloodletting alone would lessen the intensity of the inflammatory dermatoses, he believed that the results obtained in his cases were not due solely to it. In conclusion, he states that autogenous serum alone is not of value in psoriasis, but that when employed in conjunction with chrysarobin it is of decided benefit.

We are of the opinion that the reason for the seemingly increased beneficial effect from the use of chrysarobin in the treatment of psoriasis by the means of this method lies in the elimination of waste products and toxins from the blood through venesection, thus tending to reduce inflammation, rather than from the autoserum injected. It may well be that venesection, while removing a certain amount of waste products from the blood, does not do so sufficiently to effect complete disappearance of the lesions, but does remove enough to enable the comparatively weak chrysarobin ointment to exert its specific effect.

The systemic effects of bleeding are marked and varied. Dutton quotes Da Costa as saying: "Venesection diminishes blood pressure, increases the speed of the blood current and thus amends stasis and absorbs exudates; lowers temperature, arrests cell proliferation, and stops effusion." Venesection also removes toxic material from the blood in direct ratio to the amount of blood withdrawn; it stimulates the formation of antitoxins and increases the agglutinating properties of the blood serum. The number of leukocytes is greatly increased; the blood-making organs are incited to make new blood cells, and, moreover, they are produced in excess of the number lost. It would therefore appear that repeated abstraction of small quantities of blood results in the production of blood of a better type. In addition to a depurative action of the blood, as the result of renal stimulation, a certain quantity of waste products and toxins is withdrawn in the abstracted blood. To the combined detoxicating effect must be added the increased ability of the regenerated blood to withstand toxic influences.

For a number of years past, one of us (J. K.) has been accustomed, both in private practice and at the Presbyterian Hospital, to abstract blood in various dermatoses. Some years ago, in the First Dermatological Service at the New York Skin and Cancer Hospital, we bled a considerable number of selected patients with varied and extensive dermatoses, in order to test the value of the method. We practiced venipuncture extensively in psoriasis, dermatitis herpetiformis, and urticaria; but less frequently in erythema multiforme and dermatitis medicamentosa. The method should not be used in asthenic debilitated, anemic or chlorotic patients.

It is superfluous, before an audience of this character, to enter into a description of the technic of venipuncture, save to recommend a platinum needle of fairly large caliber (from 16 to 14 gage). Its lumen is much smoother than that of a steel needle, and very much more blood can be removed before it becomes occluded. The amount of blood withdrawn varies from 100 to 300 c.c., depending on the asthenic condition of the patient. We usually bleed once or twice a week. The method is more or less empiric; we do not attempt to set up a definite theory for its use save a detoxicating and depurative action on the blood, stimulation of the excretory organs, the increase of antitoxins, and regeneration of the blood mass.

In psoriasis, bloodletting seems to be of value in the acute cases with marked congestion around the lesions. These patients were invariably benefited. In erythema multiforme, it is a therapeutic adjuvant of very decided value. In dermatitis herpetiformis, venipuncture repeated systematically invariably improves

the condition of the eruption and relieves the subjective symptoms. The most gratifying results, however, were obtained in urticaria, particularly in that type of the disease with large raised wheals and associated angioneurotic edema with intense pruritus. One of us (J. K), while on service in France, employed venipuncture with considerable success in the treatment of the anaphylactoid urticarial eruptions following the injection of antitetanic serum in wounded soldiers.

### CONCLUSION

We believe that the method is of occasional value in certain cases of psoriasis, erythema multiforme, and dermatitis herpetiformis. It is of great value in the treatment of urticaria, and in our hands afforded more relief in severe cases of that disease than any other therapeutic method.

### ABSTRACT OF DISCUSSION

DR. JOHN H. STOKES, Rochester, Minn.: I thought I had observed beneficial effects from venipuncture alone in a case of pityriasis lichenodes chronica, a disease whose resistance to treatment is notorious. I also feel that the withdrawal of from 200 to 300 c.c. of blood twice a week, in cases of dermatitis herpetiformis with reinjection of serum thus obtained is of marked benefit. It is possible that some of this benefit is traceable to the effect of the withdrawal of blood rather than to the reinjection of the autogenous serum.

DR. WILLIAM ALLEN PUSEY, Chicago: I have not used blood letting, but I have thought of it very frequently since we began the use of autogenous serum a few years ago. I believe it is worthy of trial in certain types of skin diseases in sthenic patients.

DR. AUGUSTUS RAVOGLI, Cincinnati: When the psoriasis patient loses albumin by a protracted illness the psoriasis disappears temporarily. Bloodletting is nothing less than diminishing the strength of the protein elements and the albumin; in consequence, there is some improvement, but it is only temporary. I have seen psoriasis disappear entirely after a severe attack of pneumonia, and then reappear again. Therefore, I have used blood letting, taking the corpuscles out and using the blood autogenous serum again, injecting it into the patient according to the method of Dr. Howard Fox. This has brought some little improvement, but it was only temporary and the patient got psoriasis again. As in dermatitis herpetiformis, there are some toxic elements in the system that maintain this disorder, by poisoning the nervous system, and so long as these toxins are not neutralized the condition will remain.

DR. F. W. CREGOR, Indianapolis: Itching of the skin comes from one of two conditions, either a dilatation of blood vessels, or a piling up or thickening of the epidermis, causing a pinching of the nerve endings and consequent itching. I can see wherein this method may be of great value in the treatment of many patients. We are employing the method in a case of pemphigus vulgaris, afterward replacing the serum. After five injections the patient has shown some improvement. I believe that venipuncture has greater usefulness and should receive more attention than it has recently.

DR. HOWARD FOX, New York: When I reported on the use of venipuncture as an adjuvant to chrysarobin in the treatment of psoriasis, I stated that the improvement might have been due to the bloodletting alone or to the special interest that an old psoriatic would naturally take in a new method of treatment. I am now inclined to think that the venesection had a great deal to do with it. I thought the autoserum treatment of psoriasis had had a quiet burial in the dermatologic "Potter's field." I was, therefore, interested to hear Dr. Schamberg say recently that in the eruptive stage of an attack of psoriasis he considered the autoserum injections to be of value.

DR. PAUL E. BECHET, New York: The words "occasional adjuvant" were used in the title of the paper in order to exclude any thought of a claim that permanent results invariably followed the use of this method. In certain cases venipuncture is a valuable therapeutic adjuvant. In psoriasis of the acutely inflamed type it quickly relieves the congestion.

## New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

**ICHTHYNAT. — Ammonium Ichthynatum.** — An aqueous solution the important medicinal constituents of which are ammonium compounds containing sulphur in the form of sulphonates, sulphones, and sulphides. These characteristic forms of sulphur result from the sulphonation of the tarlike distillate obtained from certain bituminous shales.

*Actions and Uses.*—See general article on sulphoichthyolate preparations and substitutes.

*Dosage.*—Internally, from 0.2 to 2 Cc. (3 to 30 minims) mostly in simple solutions in water, or peppermint water, sometimes in the form of pills or capsules. Locally, in vaginal, uterine or rectal suppositories, in from 0.06 to 0.18 Cc. (1 to 3 minims) bougies, or from 1 to 3 per cent. solution in treatment of gonorrhea. Ointments containing from 10 to 40 per cent. of ichthynat may be prepared, using as a base fat, lanolin or petrolatum.

Manufactured for The Heyden Chemical Works, Garfield, N. J. No U. S. Patent. U. S. Trademark No. 44,053.

Ichthynat is a brown-black, syrupy liquid having a characteristic, empyreumatic odor and burning taste.

It is completely soluble in water; incompletely soluble in alcohol or ether, but nearly soluble in a mixture of equal volumes of alcohol and ether; also soluble in a mixture of equal volumes of alcohol, water and ether. It is miscible with glycerine.

The aqueous solution of ichthynat (1:10) has a faintly acid reaction on blue litmus paper. The aqueous solution of ichthynat (1:10) yields a greenish-black resin-like precipitate on the addition of hydrochloric acid. This precipitate is soluble in ether; it is partially soluble in alcohol; soluble in water, but if dissolved in the latter solvent it may again be precipitated from solution by the addition of hydrochloric acid or sodium chloride test solution. With barium chloride test solution the aqueous solution of ichthynat (1:10) gives a brownish-black precipitate which is insoluble in diluted hydrochloric acid. If the aqueous solution of ichthynat (1:10) be boiled with potassium hydroxide test solution ammonia is evolved. If 1 Gm. of ichthynat be ignited it should leave not more than 0.5 per cent. of residue. If 10 Gm. of ichthynat be diluted with 90 Cc. of water, the mixture placed in a glass-stoppered cylinder and allowed to remain undisturbed for twenty-four hours, no deposit should form.

If dried at 100 C. ichthynat should not lose more than 47.0 per cent. of its weight (absence of an undue amount of *water*). If from 5 to 6 Gm. of ichthynat be weighed into a flask, 25 Cc. of potassium hydroxide test solution and 100 Cc. of water be added, the mix ure distilled until no more ammonia passes over, the distillate collected in 15 Cc. of normal sulphuric acid to which 1 drop of methyl orange test solution has been added and the excess of acid then titrated with tenth-normal potassium hydroxide, the amount of normal sulphuric acid consumed should correspond to from 3 to 5 per cent. of total ammonia ($NH_3$). If from 5 to 6 Gm. of ichthynat be weighed into a beaker, diluted with 50 Cc. of water, 10 Cc. of a 10 per cent. solution of albumin added, followed by 5 portions of 5 Cc. each of diluted hydrochloric acid, shaking after each addition, the mixture made up to a volume of 500 Cc. and filtered through a dry filter, and if 200 Cc. of the filtrate be heated to boiling, 10 Cc. of barum chloride test solution added, the mixture allowed to stand for twenty-four hours, the precipitate of barium sulphate collected, heated and weighed in the usual way, the weight of barium sulphate obtained should correspond to from 5 to 7 per cent. of ammonium sulphate. If from 0.5 to 1 Gm. of ichthynat be weighed into a Kjeldahl flask, diluted with 30 Cc. of water, 5 Gm. of potassium chlorate added, followed by 30 Cc. of nitric acid the mixture evaporated to about 5 Cc., 25 Cc. of hydrochloric acid added, this solution evaporated to about 5 Cc., 25 Cc. of hydrochloric acid again added, this solution evaporated to about 5 Cc., 100 Cc. of water added, this solution heated to boiling, 10 Cc. of barium chloride test solution added, the mixture allowed to stand for twenty-four hours, the precipitate of barium sulphate collected, heated and weighed in the usual way, the weight of barium sulphate should correspond to from 8 to 10 per cent. of total sulphur. If the ammonia contained in the ammonium sulphate as previously determined in ichthynat be calculated, and the result subtracted from the "total ammonia" as previously determined, the remainder should represent the ammonia combined with the organic-sulphonic acids. If this value be multiplied by 1.88 the result (from 3 to 5 per cent.) should represent the sulphur present in the sulphonic acids in an oxidized state, i. e., the "sulphonic sulphur." If the sulphur contained in the ammonium sulphate as previously determined in ichthynat be calculated, and the result subtracted from the "total sulphur" as previously determined, the remainder should represent the sulphur present in the organic sulphonic acids contained in the substance. If the "sulphonic" sulphur in ichthynat as previously calculated be subtracted from the sulphur in the organic-sulphonic acids as previously calculated, the remainder should correspond to from 5 to 8 per cent. of "organic" ("sulphid") sulphur.

Ichthynat is incompatible with acid and saline solution, fixed alkalies, their carbonates and iodides, alkaloidal salts and mercuric chloride.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

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SATURDAY, OCTOBER 2, 1920

## METHYLENE BLUE REDUCTION TEST IN STUDY OF PROBLEMS IN INFECTION AND IMMUNITY

It may be recalled that Ehrlich demonstrated that living cells reduce methylene blue by appropriating oxygen. When oxygen is taken away from methylene blue it becomes colorless, and the so-called methylene blue reduction test has been applied with interesting results in the study of various problems in infection and immunity. The question as to the manner in which this reduction is brought about still remains open, some holding that it is caused by a "vital activity" of the cytoplasm, others that it is brought about by a simple chemical reaction, and still others that it is an enzymatic process.

Neisser and Wechsberg [1] used methylene blue as an indicator to demonstrate the vitality of leukocytes, spermatozoa, etc., and they found that filtrates of staphylococcus cultures impair leukocytes so that they no longer can reduce it. This effect was found to be due to a true toxin known as staphyloleukocidin. Ricketts [2] applied methylene blue in a study of the action of neurotoxic serum produced by injecting an animal with extracts or suspensions of nervous tissue. He found that an emulsion of normal nervous tissue reduced methylene blue by the conjoint action of heat-resistant and heat-sensitive substances. No reduction took place within twenty-four hours if the tissue had been exposed to a temperature of 70 C. for half an hour, but the addition of normal serum restored the reducing power. Strassnar [3] observed that methylene blue is reduced by sulphydrid (— SH) groups of the tissues and that their activity is destroyed by heat but restored by the addition of tissue containing sulphydrid groups, thus confirming in a way the observation of Ricketts. Recently Nakayama [4] used methylene blue to test the vitality of leukocytes in a study of streptoleukocidin, a toxic substance produced by virulent streptococci, and he presents evidence that this substance is of the nature of a true toxin acting directly on the leukocytes to destroy their morphologic and functional characteristics. Possibly this streptoleukocidin is one of the weapons used by streptococci in their combat with the anti-infectious forces of the body.

Gordon [5] gives an interesting account of the reduction of methylene blue by the meningococcus. He found that the meningococcus has almost no reducing power in water and salt solution, but is very energetic in serum and broth, this difference being explained as the result of impairment of the vitality of the organisms in the fluids mentioned. It was found, further, that disinfectants such as mercuric chlorid, zinc sulphate and chloramin-T also diminish the reducing power of meningococci. Contrary to expectation, it was found that a temperature of 60 C. for half an hour, which is detrimental to the organisms themselves, had almost no effect on their reducing power. As no reduction takes place in cultural fluids from which the organisms have been completely removed, Gordon concludes that it concerns an insoluble enzyme that is confined to the surface and interior of the cocci, in other words, an endo-enzyme. It was also found that while a sterile exudate produced by injection of Witte peptone into a rabbit intraperitoneally failed to reduce methylene blue, a purulent exudate containing meningococci caused reduction in a dilution as high as 1:64, and it is suggested that this reduction test may detect meningococci in purulent exudate if they are alive and present in large numbers.

The reduction of methylene blue may therefore be used for at least two purposes: first, to test whether cells have suffered damage and loss of vitality; and, second, to test whether pathogenic bacteria produce reducing substances which, in turn, possibly may be made use of in diagnosis. In connection with this matter it is of interest to note that Drew [6] finds that cells of malignant tumors possess greater power to reduce methylene blue than normal cells. Possibly a better insight into the activities of malignant cells may come from further studies along this line.

1. Neisser and Wechsberg: Ztschr. f. Hyg. u. Infektionskr. **36**: 299, 1901.
2. Ricketts: J. Infect. Dis. **1**: 590, 1904.
3. Strassnar: Biochem. Ztschr. **27**: 295, 1910.
4. Nakayama, Yasushi: J. Infect. Dis. **27**: 86 (July) 1920.
5. Gordon: Special Report 50, Medical Research Committee, 1920.
6. Drew: British J. Exper. Path. **1**: 115, 1920.

## THE GROWTH OF POPULATION AND THE FOOD SUPPLY

This is the year in which a census of the population of the United States is taken. The increase in the number of persons in a given area, in some instances, directs attention to the possibilities of subsistence for them. Population and food supply are indissolubly linked together. Will there be enough or will there be a famine? In view of the increase of population, it has been a favorite pastime for scientists to calculate the possibilities of the food supply of the future and to venture prophesies involving the prospect of impending failures. In his presidential address in 1898 before the British Association for the Advancement of Sci-

ence, Sir William Crookes affirmed that England and all civilized nations stand in deadly peril of not having enough to eat. The shortage has not appeared in the expected time and order because this eminent scientist did not adequately take into account the possibilities of increased acreage of cereal grains, greater productivity, and changes in the food supply.

The World War has decreased the number of consumers and producers, and has "brought the wolf of hunger to the doors of millions of people." Yet the menace of famine is gradually being dispelled, so that Sir Henry Rew, whose long experience on the board of agriculture in Great Britain entitles his opinions to respectful consideration, declared in his book on "Food Supplies in Peace and War," published last year, that, "given settled social and political conditions, food production in Europe as a whole may be expected to be restored to its prewar level in the course of two or three years, or, say, after the harvest of 1921." The pressure of economic necessity, combined with the suggestions of agricultural science, are more than likely to keep away direst want from the great majority, even though limited areas may suffer severely because of unfavorable local, geographic or political conditions.

What about ourselves on this side of the Atlantic? During the great struggle just closed, we gave thought to the needs of European brethren in ways that contributed to the filling of empty stomachs as well as the conservation of ethical principles. Our own future now demands some consideration. Pearl and Reed,[1] of the department of biometry and vital statistics at Johns Hopkins University, have estimated, by methods which only an expect statistician may be expected to understand, that the maximum population which continental United States, as now areally limited, will ever have will be roughly twice the present population. This would represent about sixty-six persons for each square mile of land area, a density of population far smaller than that of such countries as Belgium and the Netherlands, with several hundred persons in the same unit of area. Although they are economically self-supporting, they do not produce the means of subsistence directly. On the basis of our present food habits, which in turn are essentially dependent on physiologic requirements, a population of twice our size would require about 250,000,000,000,000 calories per annum.

What is the outlook? According to Pearl,[2] the United States, during the seven years 1911-1918, produced as an annual average, in the form of human food, only 137,163,606,000,000 calories per year. Pearl and Reed [1] remark that unless our food habits radically change, and a man is able to do with less than from 3,000 to 3,500 calories a day, or unless our agricultural production radically increases, it will be necessary, when their modest figure for the maximum population is reached, to import nearly or quite one half of the calories necessary for that population. It seems improbable that the population will go on increasing at any very rapid rate after such a condition is reached. Meanwhile, the menace of famine does not appear as distressing as the pessimists would have us see it. However, before the pinch comes it may be well to realize what are the foremost sources of our nutrition. Wheat occupies the outstanding position; next to it comes the hog; the dairy cow is third. The wheat crop, the hog and the cow together comprise our great reservoir of human nutrients. Together they produce 62 per cent. of all the protein and carbohydrate used as human food, 69 per cent. of all the fat, and 65 per cent. of all the calories. Hence, as Pearl has pointed out, any campaign for increased food production, to be really effective in a nutritional sense, must be concentrated on a very few of the great staples. It would be an economic mistake to overemphasize the calorific value of the dozens of other foods that enter into the dietary of Americans, even though they take a significant physiologic part.

1. Pearl, Raymond, and Reed, L. J.: On the Rate of Growth of the Population of the United States Since 1790 and Its Mathematical Representation, Proc. Nat. Acad. Sc. **6**: 275 (June 15) 1920.
2. Pearl, Raymond: The Nation's Food, Philadelphia, W. B. Saunders Company, 1920.

## CALCIUM CONTENT OF THE BLOOD

The element calcium has acquired a position of importance among the inorganic components of the body, and its problematic rôle has grown to considerable significance with the development of modern physiology. The various functions that have been ascribed to calcium cannot be summarized here in detail. Aside from its obvious relation to the growth of the tissues, particularly the bones, the element is known to be involved in the clotting of the blood and of milk, in the maintenance of the physiologic equilibrium that makes the blood an ideal circulating medium and nutrient for the heart, in the preservation of a normal permeability of the blood vessels, and in maintaining a normal irritability of various parts of the nervous system.

In view of these facts and hypotheses—for some of the items cited can scarcely be designated as indisputable facts—one naturally inquires how calcium is transported in the organism. Is it maintained at a constant content in the blood, like sugar or chlorids; or does it fluctuate in amount in the circulation according to variations in supply and demand? Owing to the imperfections of analytic technic, the answers to these questions have been involved in considerable uncertainty. Recently, Kramer and Howland [1] of the Johns Hopkins University have demonstrated anew that the concentration of calcium in the serum of normal adults is singularly constant, so that even small deviations are regarded as diagnostic of disorder. For

1. Kramer, B., and Howland, J.: Method for Determination of Calcium in Small Quantities of Blood Serum, J. Biol. Chem. **43**: 35 (Aug.) 1920.

instance, whereas human blood serum exhibits a content of 9 or 10 mg. per hundred cubic centimeters, the serum of infants suffering from tetany may exhibit a decrease in calcium amounting to more than 50 per cent.[2]

A second problem concerns the possibility of altering the calcium content of the blood. Considerable evidence might be cited to show that the feeding of diets rich or deficient, respectively, in calcium makes no appreciable difference in the amount of this element found in the blood, bones or other tissues.[3] Confirmation has just been afforded by Clark,[4] at the University of California. Feeding a calcium-rich diet to animals had no effect on the calcium content of their blood. A transitory increase could be obtained only by intravenous or subcutaneous injections of lime salts. These findings with respect to the blood, however, do not justify the assumption that in the long run variations in the intake of calcium are without moment to the body.

## THE ANTIVIVISECTION INITIATIVE IN CALIFORNIA

The public and the medical profession in California are facing a serious situation. An antivivisectionist initiative is to be voted on by the people of the state at the November election. If the majority of the voters approve the measure, it will become a law without any action on the part of the legislature or of the governor.

Even a cursory examination of the proposed legislation reveals its harmful character. If adopted, all the experimental research in general biology, in agriculture, and in general and veterinary medicine would have to be discontinued. Furthermore, the proper training of students in these essential subjects would be rendered impossible. The measure would virtually abolish in California the use of modern diagnostic methods in the practice of medicine. No Wassermann reactions, no diphtheria tests for virulence, no inoculations to determine the presence of tuberculosis would be permitted. The preparation of vaccines and curative serums, and the standardization of drugs by animal tests could not be carried out. Many public health activities would be paralyzed. For example, the making of a positive diagnosis of bubonic plague, and the control and study of certain epidemics of food poisoning would be stopped because they require procedures prohibited by the proposed law.

The Board of Regents of the University of California and the Trustees of Stanford University have united in a public protest against the antivivisectionist initiative. A part of the statement is as follows:

> The advance of sanitation, modern medicine and physiology and the teaching of biology all rest on animal experimentation. The control of epidemic diseases, the management of surgical operations and of childbirth, and the certification of milk and water supplies would be impossible without the knowledge gained by such studies. In fact, the whole structure of the present day protection of the public from disease rests upon animal experimentation.
>
> The University of California and Stanford University are vitally interested in this initiative measure since its passage would stop the research work now going on in their medical schools, hospitals and laboratories, and in the Bureau of Animal Industry. The studies on botulism in olives, which will not only save the ripe olive industry of the state, but many lives, would cease, as would likewise the manufacture of serum for the prevention of hog cholera, the preparation of vaccine for anthrax, and the various other measures that annually save millions of dollars and prevent great suffering among domestic animals. Even feeding experiments on animals would be impossible.
>
> No worse attack on the welfare of the state and on the right of the university to seek and teach the truth could be made. Every man, woman and child, every unborn babe, every domestic animal in the state will be affected if this measure becomes a law. It is unnecessary special legislation due to prejudice and misinformation. No one will tolerate cruelty to animals. The present laws of the state are drastic and quite sufficient to control any abuse. We know that there is no cruelty to animals in the laboratories of the universities. They are in charge of men and women of the highest character, who are unselfishly working to better the lot of their fellow men. Anesthetics are always used for animals in the laboratory in exactly the same way that they are used by surgeons in the operating room. The real object of the antivivisectionist is not the prevention of cruelty to animals, but the prevention of progress in science and medicine.

With reference to the statement that the present laws of the state are sufficient to control any abuse, it is well to recall that in 1915, Hiram Johnson, then governor, vetoed a proposed antivivisection law, and in explaining his refusal to sign the bill, declared:

> I may add that the laws of the state of California for the prevention of cruelty to animals and the punishment of those guilty are plenary. Full authority is given to the humane officer, under the law, to obtain search warrants, enter premises, and gather such evidence as he may suspect exists. With our drastic laws, there can be no excuse for those who insist cruelties are practiced upon animals for permitting these cruelties to continue or those practicing the cruelties to go unpunished.

In the history of the efforts of antivivisectionists to prevent the progress of medicine by methods that have proved of the utmost value in every one of the natural and biologic sciences, this is the first time that an appeal has been made directly to the voters. Eastern antivivisection journals have called repeatedly for financial and other support for the propagandists who are working in California. The activities carried on there indicate that a large amount of money has been contributed from other parts of the United States, and that the usual distribution of misleading and harrowing descriptions of laboratory procedures, a practice so severely censured by the British Royal Commission, has been employed. A test is thus to be made of the general intelligence of the voters of California. When people are properly informed of the methods of animal

2. Howland, J., and Marriott, W. McK.: Quart. J. Med. **11**: 296, 1917-1918.

3. Weiske, H.: Ztschr. f. Biol. **7**: 179, 133, 1871. Weiske, H., and Proskou, H.: Ibid. **8**: 239, 1872. Weiske, H.: Ibid. **10**: 410, 1874. Voit, E.: Ibid. **16**:55, 1880. Aron, H., and Sebauer, R.: Biochem. Ztschr. **8**: 1, 1908. Kost, A.: Die Kalkverteilung im Organismus nach Aufnahme von Chlorcalcium, Inaug. Diss., Bonn, 1913. Patterson, S. W.: Biochem. J. **3**: 39, 1908. Denis, W., and Minot, A. S.: J. Biol. Chem. **41**: 357, 1920.

4. Clark, G. W.: Effect of Hypodermic and Oral Administration of Calcium Salts on the Calcium Content of Rabbit Blood, J. Biol. Chem. **43**: 89 (Aug.) 1920.

experimentation, the precautions that are taken to avoid unnecessary pain, the character of the investigators, and the beneficent results that flow from medical research, there is no question that a large majority will not only tolerate, but will promote the efforts of the laboratory workers. It is of prime importance that well-informed physicians recognize the fundamental question which is presented by this legislation, and that they spend time freely to give information as to what the measure really means. The burden of responsibility is placed on the enlightened because we live in a democracy, and are ruled democratically.

## *Current Comment*

### A NEW PHASE IN THE SERUM THERAPY OF EPIDEMIC MENINGITIS

We have no experimental evidence that meningococci secrete soluble toxin in the strict sense of the word, and it has been assumed by some that the action of meningococci is due largely to substances of the nature of endotoxins, so called. The first definite evidence that such may be the actual case has been produced by Gordon,[1] who finds that extract of dried meningococci in distilled water is fatal to mice in doses of from 0.1 to 0.2 c.c. intraperitoneally. This extract is highly heat resistant, withstanding a temperature of 100 C. or even 120 C. for half an hour without any apparent loss of toxicity which, however, is lost after heating to 120 C. for two hours. Increase in the virulence of a meningococcus strain is not necessarily associated with a demonstrable increase in the production of endotoxin, as Gordon found the virulence of a strain of Type I could be increased tenfold while its toxicity remained unchanged. Another point in favor of the existence of a meningococcus endotoxin is furnished by the following observation: At the beginning of the outbreak of epidemic meningitis in the British armies, the antimeningococcus serum used failed to reduce the gross mortality below 40 per cent. except in the London District, where the serum reduced the mortality to 18.5 per cent. With a view to finding the cause of this variation in the potency of the serum, Gordon took up a study of the specific antibodies in antimeningococcus serum, and he came to the conclusion that the efficiency of the serum used in the London District was not due to its content in agglutinin, precipitin, opsonin, bacteriolysin or complement fixing substances, but to the presence of an antiendotoxin. He found that 0.5 c.c. of the therapeutically successful serum neutralized one minimal lethal dose for the mouse of endotoxin of either Type I or II. Gordon finds that antiendotoxin serum for either Type I or Type II can be produced by injecting rabbits with the corresponding dried meningococci, Type II, though less toxic to the animal, being the better antigen. Further experiments looking to the production of a more potent antimeningococcus serum by making it more definitely antiendotoxic are desirable.

1. Gordon: Special Report 50, Medical Research Committee, 1920.

### MOSQUITOES AND BATS

Since the danger of mosquitoes as a factor in the transmission of disease has come to be clearly understood, many suggestions for their eradication have received serious consideration. Some of the proposed plans have proved to be practical and have been put into operation in various parts of the world. This is particularly true of schemes for destroying the breeding places of the mosquitoes by drainage and other sanitary procedures. Where this has proved to be too costly or difficult, suitable chemical treatment, such as the spreading of oil in the objectionable localities, has been found efficacious in reducing the numbers. Among other projects has been the search for biologic agencies that will destroy the insects. Thus, there are species of fish which consume the mosquito larvae. Considerable newspaper notoriety has been attained by a suggestion widely advertised in one of the Southern states suggesting the desirability of securing an increase in the numbers of bats living in localities where mosquitoes and mosquito-borne diseases abound. The proposal is based on the admitted fact that bats devour mosquitoes among the other flying insects that they capture on the wing. Experts of the Bureau of Entomology have been investigating the assertion that bats are important mosquito-destroying animals with respect to the alleged desirability of encouraging the erection of the proposed bat-roosts. The report[1] does not warrant any undertaking of this sort. The evidence in regard to Southern bats is still conflicting, while even experimentation with Northern bats seems not to justify the expense. Bats, however, do feed on injurious insects, and very likely should be protected, a course that the state of Texas is being urged to adopt. However much sanitarians may regret the apparent untenability of the bat-roost idea and the inadvisability of attempting the institution of artificial batteries, the public at large is not likely to regret the decision to leave the bat where it naturally belongs.

### IS FAT ABSORBED DIRECTLY INTO BLOOD VESSELS?

It is almost a self-evident truth that, in order to recognize and understand properly abnormalities in the metabolism of matter in the body, we must first know precisely what normally becomes of the food that we eat. The story of the transformation of the nutrients in the organism still remains to be written in its entirety. Even the first steps were scarcely recognized until recently. Today it is known fairly well how carbohydrates leave the alimentary tract and enter the portal blood stream to be mobilized by the liver. The fact that proteins are largely converted into amino-acids prior to their absorption has also been a recent contribution. They reach the tissues directly through the circulation. Fats, too, are now known to be digested, i. e., hydrolyzed, prior to absorption. A resynthesis of the fatty acids occurs after they leave the lumen of the intestine, and it has long been taught that, in contrast with the products

1. Howard, L. O.: Mosquitoes and Bats, Pub. Health Rep. 35: 1789 (July 30) 1920.

derived from the other two classes of foodstuffs, they find their way first into the lymphatic system, from which they presently reach the general circulation. For a long time there has been doubt as to whether this is the sole path of entry. In the quantitative experiments directed to the solution of this problem, not all the reabsorbed fat has been recovered in the chyle discharged into the jugular vein. To account for the portion that has disappeared, various hypotheses have been offered. Mathews,[1] for example, suggests that it may be catabolized during its passage through the mucous epithelium, or may find its way directly into the blood and so to the liver. If we may rely, however, on the latest experiments by Zucker[2] at Columbia University College of Physicians and Surgeons, the fat content of the portal vein never rises above that of the jugular during the active absorption of fat. This precludes, as he insists, the assumption of any very marked participation of the blood vessels in the absorption of fat. The dominance of the lymphatics in this process thus remains unchallenged, even if the fate of remnants of absorbed fat is not yet made clear.

### THE FRUITS OF QUACKERY

One of the best hotels in a great city, towering high on a beautiful boulevard, almost within the business district and yet overlooking the lake! In a beautiful suite high up, away from the noisy bustle of the city, sits a kindly looking gray-haired man. A touch of the wall buttons brings servants scurrying to do his bidding, for he is free with tips and with his smile. At his word a seven-passenger Peugeot, of the latest model, guided by a uniformed chauffeur, rolls up to the entrance. He wishes, perhaps, to attend the theater or to take an airing in the park or to see a friend. Not too often the latter, for he has few friends! The transient guests inquire of the clerk as to his identity. Perhaps he is a member of some foreign royal family; perhaps a magnate resting on the well-earned laurels of some gigantic deal in copper or in cotton! But no! It appears he made his fortune by selling sugar and salt. A pinch of salt and a pinch of sugar in a barrel of hydrant water guaranteed to cure any disease if the sufferer will only put one drop in each eye night and morning—approximate cost, 6 cents a gallon—selling price, $5 an ounce! Through the Middle West, in little country graveyards, are the bodies of some who read the advertisements and believed. And the "professor" orders out his car and says to the chauffeur with a lordly wave of his hand: "To the park, James." The mills of the gods grind slowly . . . Obviously.

1. Mathews, A. P.: Physiological Chemistry, New York, 1915, p. 452.
2. Zucker, T. F.: Studies in the Absorption of Fats, Proc. Soc. Exper. Biol. & Med. **17**: 89, 1920.

**Correction of Drop Foot.**—Blanc y Fortacin describes in *Medicina Ibera* **11**:191, 1920, how he permanently corrected talipes equinus in extreme adduction by lengthening the Achilles tendon and shortening the tendons of the anterior aspect of the ankle. Then he drove a peg, 6 cm. long, taken from the crest of the tibia, into the external malleolus and astragalus after boring a tunnel for it, using the Albee apparatus to prepare the peg. He says that he would not hesitate to use more than one peg if it seemed necessary.

## *Medical News*

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### CALIFORNIA

**Chinese Doctors Fined.**—Two Chinese doctors, Hong Wong and Cetoon Fong, of Santa Cruz, were fined, respectively, $200 and $100 for practicing medicine without a license. A third, Chew Yuen of Oroville was fined $300 under a similar charge.

**Physician Sentenced.**—Dr. James E. Thompson of Oakland is reported to have been given an indeterminate sentence of from two to five years in San Quentin prison for having performed an illegal operation. Petition for a new trial was denied.

**Narcotic Clinics Closed.**—Reports state that the Los Angeles and San Diego narcotic clinics, which were established for the care of persons addicted to the use of morphin, opium and like narcotics, have been permanently closed by order of the government.

**Farmers Disapprove Antivivisection Initiative.**—The antivivisection initiative measure to be placed on the November ballot was disapproved by the Agriculture Legislative Committee meeting at the state fair on the grounds that the measure would be inimical to control of diseases of live stock.

**Illegal Practitioners Arrested.**—At Los Angeles, recently, C. E. Parsons, claiming to be a chiropractor, was arrested for practicing medicine without a license. B. E. Frank and Mabel Kellom of Chico are being tried under a similar charge. It is stated that Frank had been arrested six times previously on a similar charge but had never been convicted.

### FLORIDA

**Trachoma in Public Schools.**—In a survey of the schoolchildren at Chattahoochie and Mount Pleasant, recently made under the auspices of the state board of health, the prevalence of trachoma was indicated by the finding of twenty cases among 211 children examined. All children suffering from trachoma are being treated at the Florida State Hospital.

**Sanitary Rules for Auto Campers.**—The Florida State Board of Health has promulgated regulations to safeguard the health of auto campers during the touring season. The rules and regulations pertaining to the sanitation of automobile camps within the corporate limits of any city or town in Florida provide for sanitary protection of the source of drinking water, proper sewerage facilities, a safe system of garbage disposal, and, in general, provision for the cleanliness of all camping sites. Copies of the regulations are being sent to the various newspapers throughout the United States in order to acquaint those touring in Florida with the details of the new rules.

### GEORGIA

**Health News.**—Dr. Gordon T. Crozier, Valdosta, has been elected commissioner of health of Lowndes County, to succeed Dr. Joe D. Applewhite, resigned.——Dr. Henry D. Allen, Jr., Milledgeville, has been elected commissioner of health of Baldwin County.

**Chiropractor Indicted.**—J. H. Carrick, chiropractor, was recently indicted by the Laurens County grand jury at Dublin, for practicing medicine without a license. He is said to be the fourth chiropractor to be indicted under the same charge within four weeks.

**Hospital Appeals for Radium.**—Grady Hospital through its medical board has made an appeal to public spirited philanthropists to present the hospital with a sufficient amount of radium to treat successfully the cancer patients who almost daily apply to the institution for relief. It will require approximately $20,000 to purchase the amount of radium which Grady Hospital needs, and this expenditure is not within the means of the hospital board.

### ILLINOIS

**Contract for Hospital Awarded.**—A contract for the building of the McDonough County Tuberculosis Sanatorium at Bushnell was awarded at a meeting of the board of Macomb, at a contract price of $67,516. Work will be started as soon

as materials can be delivered, and it is expected that the sanatorium will be completed by Aug. 1, 1921.

**General Hospital Discontinued.**—The Lovell General Hospital at Fort Sheridan was ordered discontinued, effective October 1. About 120 of the patients are to be transferred to Walter Reed General Hospital, Washington, D. C., and the remainder will be cared for at the Post Hospital, Fort Sheridan. The hospital buildings are to be turned over to the commanding general, Sixth Army Corps Area, Chicago.

**Anthrax in Shaving Brushes.**—A case of anthrax having been discovered in a resident of Ridgefield, Dr. Clarence St. Clair Drake, state director of health, traced the infection to a shaving brush. Further examination revealed that a lot of these infected articles, made in New York, had been distributed from that city to Chicago. The Chicago supply was distributed throughout Illinois, Indiana, Michigan, Wisconsin, Iowa, Missouri, Oklahoma, Arkansas, Texas and Colorado. From New York the brushes were distributed throughout that state, Vermont, Virginia, Kentucky, Ohio and Florida. Five persons died of anthrax in Chicago during May, at which time infection was traced to curled hair used in a factory, several employees of which were victims.

### Chicago

**Drug Traffic on Wane.**—There are fewer drug addicts and less illegal traffic in drugs in Chicago at present than at any other time within the last three years, according to a statement by Dr. Samuel A. Braun, chief of the federal antinarcotic squad. The decline was ascribed to vigorous application of the Harrison law.

**Course in Social Service.**—The University of Chicago has inaugurated a graduate school of social service administration, beginning with the autumn quarter, October 1. Elementary, intermediate and full graduate courses are offered to nurses, social workers and others interested in social service. In addition, two extension courses on related subjects will be given.

## INDIANA

**Physician Sentenced.**—Dr. Joseph H. B. Adams, Indianapolis, reported to have been arrested twice within fourteen months on the charge of having performed criminal operations, is said to have been found guilty, fined $1,000 and sentenced to the penitentiary for from three to fourteen years.

**National Psychiatric Sanatorium.**—Dr. Frank F. Hutchens, Indianapolis, has been appointed medical director and superintendent at the National Sanatorium to be established at Marion for the treatment of psychiatric cases among veterans of the World War. It is expected that the home will be open by November 1, when selected cases of mental conditions will be received there for care. The Civil War veterans now in the home will be sent to other homes.

**Tuberculosis Activities.**—At a recent meeting of the directors of the Marion County Tuberculosis Association it was pointed out that the three fresh air schools of Indianapolis were filled on the first day of school and that each has a waiting list of children. Thus far none of the branch clinics authorized by the state board of health have been opened because of the inability to secure quarters.——The Flanner House Clinic, hitherto supported by the tuberculosis association, has been taken over by the city board of health which will henceforth bear the entire expense.——Dr. Charles J. McIntyre has been appointed tuberculosis clinician and assigned to the Christamore settlement clinic.

## MARYLAND

**Personal.**—Dr. Joseph A. Seligman is recuperating from an operation at Union Memorial Hospital, Baltimore.

**Infantile Paralysis Reported.**—A fifth case of infantile paralysis in Washington County was recently reported to the county health board from Clearspring; the other four cases were reported from Williamsport.

**Effects of Prohibition.**—According to statistics compiled by the Baltimore City Health Department, prohibition is helping to lower the city's death rate, besides cutting down the number of prisoners in the Baltimore City Jail and House of Correction and lessening the population at Bay View Asylum. There have been no fatalities from alcoholism this year, as compared to fourteen in 1919, twenty-eight in 1918, thirty-seven in 1917, and ninety-four in 1916.

**New Neuropsychiatric Center.**—After the transfer of medical and surgical cases from Perryville Public Health Service Hospital No. 42 to Fort McHenry and the transfer of patients from the hospital at Cape May, N. J., to the Perryville institution, the latter will become the center for psychoneurotic cases in this district. The Maryland institution is one of fifty-nine similar hospitals established by the U. S. Public Health Service, and its work consists of caring for convalescent former soldiers whose condition does not warrant their discontinuing hospital attention. The work is carried on in connection with the Bureau of War Risk Insurance. Old government buidings have been remodeled and a new hospital has been built to accommodate 300 patients.

## MASSACHUSETTS

**Lindsey Case Continued.**—Willard M. Lindsey of Worcester is reported to have been tried recently by the board of registration in medicine for practicing without a license. He immediately started proceedings against the attorney-general and others seeking to restrain them for interfering with his practice. The case has been continued.

**Campaign Against Infantile Paralysis.**—In an effort to control the outbreak of poliomyelitis, 138 cases of which have been reported since August 1, the city council of Boston appropriated an emergency fund of $10,000, and Dr. Samuel A. Levine, Boston, has been appointed expert diagnostician in the health department for a period of three months.

## MICHIGAN

**Mobile Health Department Laboratory.**—The Muskegon Department of Public Health recently made a survey of the health conditions of Muskegon County resorts, using a truck containing a fully equipped laboratory. Special attention was paid to water and sewage disposal and impure water was found at numerous summer resorts.

**Personal.**—Dr. Artemas W. Chase has been appointed acting assistant surgeon in connection with the medical work of the War Risk Insurance Bureau in Adrian and Lenawee counties.——Dr. Edwin Rank Vanderslice, for several years medical director of the Michigan Anti-Tuberculosis Association, has resigned to enter private practice in Lansing.

**Children's Camp Successful.**—Camp Forest Hills, a summer camp for physically subnormal children maintained by the Detroit Department of Health, had a very successful season. Throughout the period of ten weeks, an average of 125 children were guests at the camp and the results attained warrant extension of facilities in 1921, as there are at least 1,100 children who need special health consideration.

## MISSOURI

**Tuberculosis Society Appoints Committee.**—The St. Louis Tuberculosis Society has appointed a medical advisory committee, for the purpose of coordinating the efforts of medical practitioners and institutions in the control of tuberculosis, consisting of Dr. Louis P. H. Bahrenburg, U. S. P. H. S.; Drs. Louis Boislinier and Lawrence Schlenker, Mount St. Rose Hospital; Dr. Seelig Simon, Jewish Home for Chronic Invalids; Dr. M. D. Dwyer, Koch Hospital; Dr. E. L. Opie, Washington University; Dr. O. H. Lamb, St. Louis University; Dr. James Stewart, board of education; Drs. Jacob Jesse Singer and Adolph M. Frank, Washington University Clinic; Dr. A. E. Henske, St. Mary's Hospital, and Drs. Samuel T. Leipsitz and Adelheid Bedal.

**Survey of Feebleminded.**—A survey of the feebleminded of Missouri was begun in the latter part of August under the direction of Dr. Thomas H. Haines, representing the National Committee for Mental Hygiene. At the request of the national committee, Governor Gardner has appointed an advisory commission to cooperate in the survey, and at its first meeting at Jefferson City, September 15, plans were adopted for giving adequate publicity to the work and for inviting the assistance of those who can solve some of the problems involved in the care of feebleminded. Drs. Malcolm A. Bliss, St. Louis; Edward J. Goodwin, St. Louis; George H. Jones, Jefferson City; Robert Patterson C. Wilson, Marshall, and J. E. Wallace Wallin, St. Louis, are among those appointed on the commission.

## NEBRASKA

**District Medical Society Meeting.**—The meeting of the Third Councilor District Medical Society was held at Table Rock, September 19, under the presidency of Dr. Roy W. Fouts, Falls City, councilor of third district.

**Hospital Affiliates with Medical College.**—The Methodist Episcopal Hospital has reorganized and enlarged its staff

and has affiliated as a clinical teaching department with the University of Nebraska, College of Medicine, Omaha.

**New Hospital Opens Doors.**—The Fenger Memorial Hospital, Omaha, the first Danish Hospital in the United States, was opened, September 22, by formal dedication services. The hospital is open to the medical profession in general and will accommodate about 200 patients.

## NEW YORK

**Centenary of Oswego Medical Society.**—In connection with the annual meeting of the Medical Society of the County of Oswego, October 12 and 13, the society will celebrate its hundredth anniversary. Headquarters will be at the Hotel Pontiac, where a banquet will be given on the evening of October 12.

**Botulism and Encephalitis Made Reportable.**—By recent action of the Public Health Council, botulism and epidemic encephalitis have been made reportable communicable diseases. The amended sanitary regulations governing the reporting of these diseases have been published in the June and July issues of the *Health Officers' Bulletin*.

**Deportation of Alien Insane.**—Increased appropriations for the United States immigration authorities for the purpose of deporting insane aliens have been urged by the New York State Hospitals Commission. Although 290 insane aliens were deported during the last fiscal year, a large number still remain in the state who might be returned if funds were available. The federal law provides that insane aliens may be deported at any time within five years after their immigration.

**Central Association Meeting.**—The fifty-second annual meeting of the Medical Association of Central New York will be held at Genessee Valley Club, Rochester, October 7, under the presidency of Dr. O. E. Jones, Rochester. Allegany, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Cortland, Erie, Genesee, Livingston, Madison, Monroe, Niagara, Onondaga, Ontario, Orleans, Oswego, Seneca, Steuben, Wayne, Wyoming and Yates counties are included within the association.

### New York City

**Ask Physical Test for Auto Drivers.**—Health Commissioner Copeland has made public a letter recently written to Secretary of State Francis M. Hugo, in which he suggests that amendments be made to the sanitary code making it impossible for those with defective vision or hearing, or those addicted to narcotic drugs, to become chauffeurs.

**Poliomyelitis Reappears.**—Following closely on a warning sent out by Dr. Copeland to every physician in the city to guard against poliomyelitis since it had made its appearance in Boston, three cases were reported, September 25. There have been forty-eight cases and eight deaths from the disease in this city since January 1, and a few cases have also been reported upstate. It is urged that all suspicious cases be at once reported to the health department.

## NORTH CAROLINA

**Typhoid in Thomasville.**—In view of the fact that the greater number of cases of typhoid fever reported in Davidson County originated in Thomasville Township, a special antityphoid campaign has been inaugurated by the county health officer, Dr. Richard Victor Yokeley. Special efforts will be made to vaccinate all residents of the township.

**O'Reilly Hospital Closed.**—O'Reilly Army General Hospital, at Oteen, near Asheville, was ordered closed as an Army hospital, October 15, and the patients transferred to the government tuberculosis hospital in Denver. The hospital buildings have been turned over to the Public Health Service for the hospitalization of War Risk Insurance Bureau patients.

## OHIO

**Medical College Centenary.**—The University of Cincinnati College of Medicine is planning to celebrate the one hundreth anniversary of the founding of the Ohio-Miami Medical College, the name under which the medical school was first established. It is said that Sir Auckland Geddes, ambassador from Great Britain to the United States, has accepted an invitation to speak at the celebration.

**Medical Chautauqua at Dayton.**—Virtually every doctor in Montgomery and the seven other counties comprising the second councilor district of the Ohio State Medical Society attended the meetings, held September 20-24. The program virtually constituted a postgraduate course, to which papers were contributed by Drs. Hugh T. Patrick, Dean D. Lewis and Alfred C. Croftan, Chicago, Walter B. Cannon, Boston, and Henry J. Gerstenberger and Charles F. Hoover, Cleveland.

**District Medical Society Election.**—At the annual meeting of the Tenth District Medical Society held at Chillicothe, September 9, at which more than 150 physicians were in attendance, Dr. J. B. Mayes, New Holland, was elected president, and Dr. J. A. Beer, reelected secretary. The next annual meeting will be held in Circleville, sometime in September. Dr. Henry Gerstenberger, professor of pediatrics in Western Reserve University, Cleveland, was the principal speaker at the meeting.

## PENNSYLVANIA

**State Medical Society to Meet.**—The seventieth session of the Medical Society of the State of Pennsylvania will be held October 4 to 7, at the William Penn Hotel, Pittsburgh.

**Society Unveils Tablet.**—At the first called session of the Washington County Medical Society, held September 14, at the Pennsylvania Training School, Morganza, a tablet in honor of the members of the society who entered the military service during the World War was unveiled. The tablet was provided by a committee appointed by the society more than a year ago, and the presentation address was made by Dr. John Boyd McMurray, Washington.

**Test Case on State Aid.**—Hearing of the mandamus proceedings brought by Willis Collins of Norwood to test the right of the Pennsylvania Legislature to make appropriations to charitable institutions alleged to be denominational or sectarian, was begun in the Douphin County Court, September 22, before Judge Frank P. Wickersham. The institutions involved in the hearing are Jewish Hospital, Philadelphia; Sisters of Mercy of Crawford and Erie counties; St. Timothy's Hospital, Philadelphia, and the Protestant Deaconesses Home, Pittsburgh.

### Philadelphia

**Jefferson Medical College Notes.**—Dr. Hobart A. Hare, professor of materia medica, delivered the address introductory to the ninety-sixth annual session of the Jefferson Medical College in the clinical amphitheater of the Jefferson Hospital, September 22.——Dr. Frank Crozer Knowles has been appointed professor of dermatology, succeeding Dr. Henry W. Stelwagon, deceased.

**Public Health Service Hospital.**—A neuropsychiatric hospital, known as U. S. Public Health Service Hospital No. 49, has been opened at the old Naval Hospital, Gray's Ferry Road. The institution, specially fitted for the care of psychiatric patients of the Bureau of War Risk Insurance, has a capacity of 420 beds. The present census is 381, 262 of which were recently transferred from U. S Public Health Service Hospital No. 39, Parkview, closed by order of the Public Health Service.

## TENNESSEE

**Pure Milk Campaign.**—The city health department of Memphis, under the direction of the superintendent, Dr. James Johnson Durrett, is making a crusade to insure for the residents of the city an abundant supply of clean milk, handled in a sanitary manner. The woman's central committee has issued a call to all women who are interested to take an active part in the campaign.

**Warning.**—The Tennessee State Board of Health has issued a warning calling attention to the operation and activities of a "Dr. Quimby," who is traveling through some of the counties of Tennessee representing himself as an agent of the state board of health and treating cancer with some preparation of his own. "Dr. Quimby" advises his prospective victim that at least two treatments will be necessary, and collects what he can for the first treatment. He has never returned to administer the promised second treatment.

## TEXAS

**Plague in State.**—The ninth death from bubonic plague has been reported from Galveston.——Dr. H. F. White, Passed Assistant Surgeon, U. S. P. H. S., has been ordered to Galveston to take charge of the plague work, and Dr. J. H. Smith has been transferred to Beaumont to carry out plague prevention measures there.

**Educational Campaign Against Malaria.**—The Cotton Belt, M. K. and T., and other railroads traversing Texas are cooperating with the state board of health in conducting an

educational campaign against malaria. The Cotton Belt's health car, "Anopheles," which includes model screening demonstrations, a supply of state board of health literature on malaria, and illustrations of the life cycle of the mosquito, is being used for an extensive educational tour.

## WASHINGTON

**Joint Meeting of Tuberculosis Societies.**—At a joint meeting of the King County Anti-Tuberculosis League and the Washington State Tuberculosis Association, held in Seattle, September 4, Dr. Donald B. Armstrong, Framingham, Mass., was the guest of honor. He outlined the work done at Framingham in the control of tuberculosis over a period of three years.

**Societies Elect.**—At the annual meeting of the Stevens County Medical Association, Dr. W. A. Cartright, Valley, was elected president, Dr. Roy Sumner Wells, Colville, vice president, and Dr. Ralph Goetter, Colville, treasurer.——At the annual meeting of the Cowlitz County Medical Society, held in Woodland, Dr. Earl Charles Hackett, Kelso, was elected president, Drs. Lumen Samuel Roach, Kalama, vice president, and Dr. Luther M. Sims, Kalama, secretary.

## CANADA

**Drug Addicts in Canada.**—The department of health, Ottawa, is endeavoring to obtain from physicians a report as to the number of drug addicts now undergoing treatment by each physician.

**Alberta Society Meets.**—At the annual meeting of the Alberta Medical Society, held September 23, at Edmonton, Dr. Walter S. Galbraith, Lethbridge, was elected president and Calgary was named as the place of meeting for 1921. The new fee table adopted at the meeting provides a fee for day visits of $3, for night calls, $5, and maternity cases, $35.

**Personal.**—Major-Gen. George Stirling Ryerson, Toronto, will shortly sail for France to spend the winter in southern Europe.——Dr. Romeo R. Boucher, Montreal, recently left for Paris where he will remain for three years.——Dr. Roy J. Farmer, London, Ont., recently was a victim of a shooting accident and is in a precarious condition.

**Professor McPhedran Honored.**—Dr. Alexander McPhedran, formerly professor of medicine in the medical department of the University of Toronto, was tendered a complimentary banquet and presented with an oil portrait of himself and a club bag, September 24. Dr. Lewellys F. Barker, Baltimore, unveiled the portrait and made a complimentary address. Physicians were present from New York, Cleveland, Connecticut, Ottawa, Hamilton, Guelph and other points.

## GENERAL

**Child Hygiene Association Meeting.**—The annual meeting of the American Child Hygiene Association will be held in St. Louis, October 11-13, under the presidency of Dr. Phillip Van Ingen, New York City.

**Mississippi Valley Association Meeting.**—The forty-fifth annual meeting of the Mississippi Valley Medical Association will be held in Chicago, October 26-28, under the presidency of Dr. Frank B. Wynne, Indianapolis. Headquarters and meeting place will be at the Congress Hotel.

**Railway Surgeons Meet.**—The annual session of the New York and New England Association of Railway Surgeons will be held in New York City, October 19, with headquarters at Hotel McAlpin. Clinics in connection with the meeting will be held at the Hospital for Crippled and Ruptured Children and the Post-Graduate Hospital and a cancer conference at the Memorial Hospital.

**Missouri Valley Society Elects.**—At the annual meeting of the Missouri Valley Medical Association held at Omaha, the following officers were elected: president, Dr. Willson O. Bridges, Omaha; vice presidents, Drs. Elbert J. Watson, Diagonal, Iowa, and Austin McMichael, Rockport, Mo.; secretary, Dr. Charles W. Fassett, Kansas City, Mo., and treasurer, Dr. Oliver C. Gebhardt, St. Joseph, Mo.

**Liquor Removed from Navy Supply Table.**—By an order recently issued by the Bureau of Medicine and Surgery, the U. S. Navy medical supply depots are prohibited from issuing whisky except to hospitals. When the present supply becomes exhausted no further purchase will be made and whisky will be stricken from the supply table of the medical department of the Navy. It is estimated that the supply now on hand will last not more than two or three weeks.

**American Red Cross Medical Personnel in Europe.**—The medical report for July shows ninety-six physicians, nine dentists, ten pharmacists, one chemist and one laboratory man, making a total of 116 for the medical personnel in Europe. This number will be cut rather rapidly by the expiration of contracts, so that by November 1, 50 per cent. of this number will have returned home. According to the present plans, there will be about fifty medical men in Europe on December 1.

**Child Health Campaign.**—The U. S. Public Health Service has inaugurated a campaign of education for the promotion of child health. Supplementing the recent propaganda of education on "The Care of the Baby," a large number of articles have been prepared and distributed to more than 100 newspapers for publication in serial form. The series is entitled "The Growing Child," and deals with a wide variety of subjects for the maintenance and promotion of the health of children.

**New Officers of Health Association.**—At the forty-ninth annual meeting of the American Public Health Association, held in San Francisco, September 15, the following officers were elected: president, Dr. Mazycke Porcher Ravenel, professor of preventive medicine at the University of Missouri; vice presidents, Dr. Theodore Bruce Beatty, Salt Lake City, Dr. Louis I. Dublin, New York City, Dr. William C. Hassler, San Francisco, and Dr. Roger I. Lee, Boston, and secretary, Mr. A. W. Hedrich, Boston.

**Porto Rican Physician Honored.**—The remains of the prominent Porto Rican physician, politician and writer, Dr. R. E. Betances, have at last been returned to his native land on an American transport. Dr. Betances was the leader of the Porto Rican revolution against Spain, on the failure of which he had to leave the island. Since this date, 1868, he remained an exile in Paris until his death in 1899. Dr. Betances represented the Cuban revolutionists for many years in Paris and the government of Cuba is now considering granting a pension to his widow. On the arrival at New York City, Dr. Betance's remains were placed in state at the City Hall and were escorted to the transport by a regiment of the National Guard, in addition to a police detachment. The remains have been interred at his native place, Cabo Rojo, Porto Rico, where it is intended to erect a monument to his memory.

**Philippine News.**—On account of criticism made of the administration of Culión leper colony, an investigation has been made recently of this institution by Dr. J. Albert of the Philippine Board of Public Health. He recommends the addition of two physicians to the personnel, some nurses and the creation of a laboratory, as the present personnel and facilities are inadequate. The number of lepers in the colony has increased from 3,959 in September, 1915, to 4,837 in June, 1920. Out of 8,227 lepers received at Culión, over 4,800 have died there. The expenses of the leper colony amount to 800,000 pesos yearly out of a total appropriation for public health purposes of 3,000,000 pesos.——Dr. F. Calderón, the editor of the *Revista Filipina de Medicina y Farmacia*, has been appointed president of the Philippine Board of Health, and Dr. L. López Rizal, secretary.——There have been opened recently in the General Hospital of the Philippines an electrocardiographic department and a new dispensary for venereal and skin diseases.——Another monument to the national Philippine hero, Dr. José Rizal, has just been erected at Tondo, Manila.——There have been several complaints made against the medical examining board because of the form of the examination questions and the delay in reporting the results of the April examinations. Twenty-two of the candidates at these examinations have been licensed and twenty-six licensed conditionally.

## LATIN AMERICA

**Physicians in Congress in Colombia.**—The *Repertorio de medicina y cirugía* of Bogotá states that there are now eight physician members of the chamber of representatives of Colombia: Drs. L. Zea Uribe, A. Saá, R. Alvarez Durán, F. H. Porras, H. Rodríguez, D. Gutiérrez y Arango, J. Medina and R. Rengifo.

**Personal.**—Dr. V. Ribón has been appointed professor of anatomy in art at the Escuela Nacional de Bellas Artes at Havana.——Dr. V. Delfino, member of the editorial staff of the *Semana médica* of Buenos Aires, has been appointed director of the Instituto Tutelar de Menores.——Dr. A. López del Valle was the official representative of Cuba at the funeral of General Gorgas.

**Guiteras in Africa.**—The *Crónica médica-quirurgica* of Havana relates that a cablegram has been received from Dr.

Juan Guiteras announcing his arrival at Dakar in western Africa on his scientific mission under the auspices of the Rockefeller Institution. From the Gold Coast he intends to proceed to Fernando Po and then to the extreme south of Africa. It will be remembered that this is the mission on which General Gorgas had started.

## FOREIGN

**Testimonial to Bajardi.**—On the retirement of Prof. D. Bajardi, on account of having reached the age limit, a bronze portrait tablet was recently unveiled at the Istituto di Clinica e Patologia chirurgica at Turin, with appropriate ceremonies.

**Politzer's Library Presented to University of Vienna.**—Prof. A. Politzer, whose death was recently reported, has bequeathed his extensive and unique library of works on otology to the university with which he had been connected from 1861 to 1907.

**New Hospital in China.**—Chinese residents of Huchow have given several acres of land for a hospital site. The projected hospital will have a normal capacity of eighty-two beds, and will be provided with all modern equipment. It is expected that the American Baptist Foreign Mission Society will cooperate with the Methodist Church South and the China Medical Board in the erection of the new plant.

**Appeal from Austria.**—In a letter received by the American Relief Committee for Sufferers in Austria from Prof. Adolf Lorenz, Vienna, the latter states that if the "hopeless condition of new Austria is not grasped to its full extent by the outer world very soon, the twentieth century of progress and civilization will witness the spectacle, unheard of in the history of mankind, of a people doomed to die of hunger, although it is intelligent, skilful and willing to work."

**Spanish Physicians in America.**—Dr. Florestán Aguilar, secretary of the Spanish medical and dental associations, and Dr. S. Recasens, a noted gynecologist and dean of the School of Medicine of Madrid, who have been visiting in this country, have returned to Spain. They had intended to proceed to South America to invite Latin American physicians to attend the next Spanish medical congress, but as the date of this meeting has been indefinitely postponed, they had to put off their Latin American trip. During their stay in this country they visited New York City, Baltimore, Washington, D. C., Rochester, Minn., and Chicago.

**International Review of Statistics.**—Notice has been received of the founding in Italy of a quarterly to be devoted to statistical methodology and its application to various branches of science. Prof. Raymond Pearl of the chair of biometry and vital statistics of Johns Hopkins University is listed as the United States representative on the editorial staff. Among the others are the directors of vital statistics in Argentina, Australia, Belgium and France. The editor in-chief is Prof. Corrado Gini of the University of Padua, Italy. The subscription is 50 lire a year, to be sent to the publishers, Industrie Grafiche Italiane, Rovigo, Veneto, Italy. Articles may be contributed in English, French, German or Italian. The circular states that the scientific grain accumulating in different countries now often goes unharvested on account of the ignorance of competent statistical methods for garnering and using it, and *Metron* has been planned to remedy this.

### Deaths in the Profession

Dr. **Rocco Gritti,** dean of the surgeons of Italy, aged 92.——Dr. **M. A. Pettersson** of Upsala, formerly physician in chief of the Nyköpings hospital, aged 74.——Dr. **L. Cajiao Cardenas** of Honda, Colombia.——Dr. **J. Berrueco** of Madrid.——Dr. **E. Kuhn,** an internist of Berlin.——Dr. **D. P. von Hansemann,** formerly of the chair of pathologic anatomy at Berlin, prosector at the Virchow Hospital, aged 62.——Dr. **W. P. Ruysch,** inspector-general of the public health service of the Netherlands and since 1912 president of the public health advisory council, aged 72. He founded organizations to promote the welfare of the insane and of industrial workers, etc., organized the first international conference on public and school baths, and often took a leading part in other international public health and medical gatherings.

## CORRECTION

**Error in Marriage Announcement.**—In the marriage announcement of Dr. H. P. Mosby, recently published, the latter was incorrectly referred to as Lieutenant Mosby. Dr. Mosby was discharged from the military service some time ago with the rank of captain.

# *Government Services*

### Appointment of Medical Officers

The War Department announces the appointment of the following emergency officers in the Medical Corps of the Regular Army; this is a third list of the medical men who have qualified in the July, 1920, examinations for commissions in the Medical Corps; the names of other successful candidates will be printed in THE JOURNAL from time to time:

LIEUTENANT-COLONEL

A. R. Pendleton, Warrentown, N. C.

MAJORS

J. C. Breitling, Fort Sam Houston, Tex.
E. H. Burgher, Fort Bliss, Tex.
W. A. Chapman, Camp Jessup, Ga.
R. K. Cole, Camp Travis, Tex.
H. L. Conner, Oteen, N. C.
L. C. Covington, Charleston, W. Va.
J. W. Easley, Brownsville, Tex.
F. Gardner, Bloomington, Ind.
A. P. Hitchens, Washington, D. C.
N. O. Lewis, Fort Oglethorpe, Ga.
C. H. Lovewell, Chicago.
A. L. Ludwick, Carlstrom Field, Fla.
J. J. Madigan, Fort Bliss, Tex.
B. J. Marshall, Houston, Tex.
C. P. Martin, Fort Huachuca, Ariz.
B. H. Olmsted, Detroit.
E. A. Palmer, Brownsville, Tex.
J. E. Poore, Columbia, S. C.
P. C. Riley, Takoma Park, D. C.
W. F. Sappington, Fort McPherson, Ga.
H. H. Smith, Jackson, S. C.
H. N. Stilphen, Oteen, N. C.
H. K. Stinson, Fort McPherson, Ga.
H. W. Stuckey, Fort Hancock, N. J.
A. K. Taylor, Camp Travis, Tex.
E. L. Whittemore, Camp Benning, Ga.
C. H. Witherell, Fort Monroe, Va.

CAPTAINS

J. H. Asheraft, Camp Bnning, Ga.
C. R. Baker, Fort McPherson, Ga.
L. R. Bice, Fox Hills, N. Y.
A. E. Brown, San Francisco.
C. L. Brown, Washington, D. C.
J. S. Brumette, Harrodsburg, Ky.
O. Burkard, New York.
C. R. Bullock, Fort Morgan, Ala.
J. S. Craig Wevaco, W. Va.
W. M. Crandall, Northwood Narrows, N. H.
H. A. Davis, Washington, D. C.
H. N. Dean, Washington, D. C.
C. M. Deck, Memphis, Tenn.
R. A. Dickson, Washington, D. C.
M. M. Dougherty, Fort McPherson, Ga.
F. J. Eisenman, San Francisco.
T. M. England, Washington, D. C.
D. W. Fetterolf, New York.
R. S. Ferguson, Fort Sheridan Ill.
W. J. Freebourn, Fox Hills, N. Y.
C. Graner, Fort Bliss, Tex.
E. H. Hamilton, Houston, Tex.
I. F. Hamner, Denver.
M. P. Hamrick, Columbus, N. M.
S. I. Harris, Denver.
H. E. Hearn, Fort Oglethorpe, Ga.
F. Holt, Oteen, N. C.
F. B. Hutton, Jr., Camp Gordon, Ga.
R. B. Irving, Washington, D. C.
J. A. Johnson, Camp Jackson, S. C.
H. Killikelly, Camp Travis, Tex.
M. A. Leach, Laredo, Tex.
C. B. Leedom, New York.
O. W. Little, Central, N. M.
J. N. Lothrop, Camp Taylor, Ky.
R. S. Loving, Fort Bayard, N. M.
W. McFarland, Washington, D. C.
R. S. McKenzie, Camp Pike, Ark.
V. N. Meddis, Fort McPherson, Ga.
P. A. Mix, Washington, D. C.
A. Morehouse, Fort Sam Houston, Tex.
D. A. Myers, El Paso, Tex.
R. J. Newman, Camp Gordon, Ga.
C. C. Odom, Fort Sam Houston, Tex.
E. W. O'Donnell, Nogales, Ariz.
S. W. Pennington, Washington, D. C.
C. H. Perry, Washington, D. C.
R. Peterson, Carlisle, Pa.
W. L. Phares, Washington, D. C.
W. C. Porter, Columbus Barracks, Ohio.
C. P. Price, Harrodsburg, Ky.
A. A. Roby, Brownsville, Tex.
G. W. Rogers, Birmingham, Ala.
J. R. Sands, Oteen, N. C.
J. A. Scull. Chicago.
B. L. Shellhorn, Peru, Neb.
R. H. Simmons, Camp Benning, Ga.
S. Smelsey, Fort Sam Houston, Tex.
R. P. Smith, Philadelphia.
H. S. Steenberg, Carlstrom Field, Fla.
C. O. Stimmel, Washington, D. C.
F. O. Stone, Camp Jackson, S. C.
R. P. Strome, Washington, D. C.
O. A. Tandrop, Camp Funston, Kan.
R. Turner, Fort Oglethorpe, Ga.
L. M. Weaver, Camp Funston, Kan.
M. Weinberg, Brooklyn.
J. M. Weiss, Rock Island, Ill.
F. O. Wells, Camp Funston, Kan.
L. C. White, Lee Hall, Va.
W. M. White, San Antonio, Tex.
P. L. Whitmarsh, Atlanta, Ga.
H. T. Wickert, Camp Dix, N. J.
T. G. Williams, Plattsburg, N. Y.
G. C. Young, San Francisco.

FIRST LIEUTENANTS

R. T. Arnest, Camp Taylor, Ky.
J. F. Arthur, Atlanta, Ga.
D. W. Bedinger, Riverside, Calif.
D. R. Blakely, Camp Gordon, Ga.
E. E. Brown, Camp Travis, Tex.
F. T. Chamberlin, Washington, D. C.
F. J. Clune, Camp Taylor, Ky.
C. A. Cummings, Buckingham, Ia.
W. P. Dodds, Camp Taylor, Ky.
J. M. Fontaine, Camp Dix, N. J.
E. C. Hagler, Fort Crockett, Tex.
H. H. Hendricks, Del Rio, Tex.
W. G. Jenkins, Denver.
H. A. Kirkham, Anchorage, Alas.
C. C. Langley, Fort Bliss, Tex.
B. A. McDermott, Denver.
H. W. Meisch, Camp Gordon, Ga.
J. M. Miller, Camp Jackson, S. C.
R. R. Paronidas San Francisco.
A. G. de Quevedo, Caguas, Porto Rico.
G. E. Rehberger, Oteen, N. C.
G. W. Ryer, Camp Harry J. Jones, Ark.
W. R. Lewis-Reinhardt, Fort Sam Houston, Tex.
B. T. Sharpton, Clarks Hill, S. C.
C. U. Snider, Camp Lewis, Wash.
C. C. Starkes, Metropolis, Ill.
D. L. Stewart, Fort Leavenworth, Kan.
T. H. Stewart, Jr., Camp Gordon, Ga.
J. E. Weir, Evansville, Ind.
T. F. Weldon, Brooklyn.
A. A. Werner, St. Louis.
G. T. Wilhelm, Memphis, Tenn.
R. C. Wolfe, Camp Grant, Ill.

### Examinations for Admission to the Public Health Service

The U. S. Public Health Service has convened boards of medical officers to meet at Washington, D. C., and San Francisco, for the purpose of examining candidates for admission as assistant surgeons. The members of the board at Wash-

ington are Surgs. J. W. Kerr, W. H. Slaughter and D. J. Prather, and of the San Francisco board, Asst. Surg.-Gen. L. D. Williams, and Surgs. J. D. Long and Robert A. Jones.

### Longevity Credit for Service in World War

Announcement has been made by Surgeon-General Ireland that former temporary officers recently commissioned in the Army Medical Corps will receive credit for all service rendered as commissioned officers since April 6, 1917. This will prove particularly beneficial to those appointed to the grade of first lieutenant, as they receive promotion to the grade of captain immediately on the expiration of three years' service.

### Communicable Diseases in the Army

A case of meningococcus meningitis was reported to the Surgeon-General's office during the week ending September 3, from Fort McDowell, Calif. This is the second case reported from that station within the last three weeks. Two new cases of typhoid fever also developed, one in a soldier recruited at Columbus Barracks and the other at Camp Pike, Ark. The report from Columbus Barracks indicates that infection was acquired prior to the soldier's enlistment in the service.

### Medical Officers for the Army

As a result of the action of the selection board which was designed by law to select officers under the new army reorganization bill, 400 medical officers have been secured, the names of those appointed being announced in this and in the two previous issues of THE JOURNAL. Of those selected two have been appointed as lieutenant-colonels, 117 as majors and 281 as captains and lieutenants. While this is encouraging there still remain may vacancies to be filled, and a new examination is announced for October 25-31. Officers who served during the recent war are eligible for this examination. The examination is not competitive, since the number of vacancies in the Medical Corps is sufficient to provide for any reasonable number of applicants who may qualify, the only requirement being that candidates must be under 58 years of age and meet the physical requirements. Applications received later than October 9 will not be considered. They should be sent to the Adjutant-General of the Army on Form 739 A. G. O., which may be obtained by writing direct to the Adjutant-General, Washington, D. C., or at any military post or station.

## *Foreign Letters*

### LONDON

*(From Our Regular Correspondent)*

Sept. 11, 1920.

### The Typhus Menace

In the name of the council of the League of Nations, Mr. Balfour has issued an appeal to the various governments for the immediate provision of $1,250,000 out of the $50,000,000 needed to combat the typhus epidemic in Poland and Galicia. Mr. Balfour says that the council of the League of Nations made an appeal last May to all members of the family of nations for funds to enable it to deal with the growing menace of typhus in Poland and eastern Europe. As yet the appeal has met scant success; but so convinced is the council of the greatness and urgency of the peril that it has requested Mr. Balfour in the name of the council to repeat it with all earnestness and emphasis. In Russia the disease seems to be epidemic. A physician just returned from that country says that it has been swept from end to end by typhus; that scarcely a town or village has escaped, and that half the physicians engaged in combating the plague have died. From this vast center of infection the disease is carried westward by an unceasing stream of emigrants. Prisoners returning to their homes, refugees flying for safety, crowd the railways. Two million have passed the Polish disinfection stations since the armistice, and doubtless many more have entered Poland without being subject to medical examination.

Every precaution is being taken at British ports to prevent the introduction of typhus. Aliens from areas where the existence of typhus is suspected are allowed to land only at scheduled ports, and each is subjected to a searching medical examination. Verminous persons are not permitted to land, but if they come from countries which are infected or under suspicion, and have no symptoms, their names and addresses are taken, and the health officer of the district is at once notified. Although British subjects coming from such areas are not subject to the medical examination required of aliens, they would have to undergo inspection if the circumstances required it. The powers of the ministry of health have been greatly extended in this direction. The health officer has powers to examine any person who is suffering from infectious disease on board a ship, and to examine any person who is on board a ship when he has reasonable grounds for believing or suspecting that infectious disease is or may be present on board, or that persons on board the ship have been exposed to infection during the voyage of the ship or during a period of three weeks immediately preceding the arrival of the ship in the district. The ministry regularly communicates to port health officers the information concerning the prevalence of infectious disease abroad.

### Prospects for Development of the White Race in Tropical Australia

The deliberations of the medical congress at Brisbane on tropical diseases and the possibilities of living for white people in a tropical climate form an important contribution to the subject. Dr. Cumpston, the director of federal quarantine, moved the following resolution, which the congress adopted: "This congress finds nothing pointing to the existence of inherent insuperable obstacles to the permanent occupation of tropical Australia by a healthy indigenous white race. The whole question of the successful development of a settlement in tropical Australia of white races is fundamentally a question of applied public health as practiced by the American authorities in the Philippines before the war and throughout the Allied armies during the war. The absence of semicivilized colored peoples in northern Australia simplifies the problem, but a considerable extension of the population and a settlement under the existing loose conditions of sanitary practice cannot hope for lasting success. The practical details do not present any difficulty."

The congress urged the improvement of the quarantine defense system; the establishment of diagnosing laboratories at Darwin, Thursday Island, Cairns, Rockhampton and other places; an extension of the hookworm campaign; the elaboration of the Australian Institute of Tropical Diseases, and the appointment of a federal ministry of health. It was pointed out that legislation would be necessary to insure a mode of life suited to the conditions, including the limitation of the consumption of alcohol, town planning, suitable hours of working, facilities for a change at the coast and in the hinterland, cheap communication with the south, and assistance to suitable immigrants. It was emphasized that the problem was one of national importance and needed expenditure. Dr. Cumpston said that it was quite possible to build up a virile race of white people in the tropical North, and that it was time that the superstition that white people could not work there was buried. The leading life assurance offices did not treat residents in northern Queensland differently from those in other parts of Australia, and the death rate was

lower for most diseases, while the birth rate was the same. Infant mortality was favorable, while tropical diseases, except hookworm, were scarce.

### Prohibition Endorsed by the British Medical Association in Australia

Under the liquor act for 1920 a referendum is to be held in Queensland every three years, of which the first will take place next October, on three issues: (1) state management of manufacture, importation and sale of fermented and spirituous liquors; (2) prohibition of manufacture, and importation and retail of fermented and spirituous liquors, to take effect in 1925; (3) continuance of the present system. A meeting of the Queensland branch of the British Medical Association has been held in Brisbane to consider the attitude to be adopted toward the referendum. Dr. A. H. Marks, C.M.G., D.S.O., opened the discussion. He said that he had enjoyed a glass of wine or an iced "lager" in the summer time and heartily agreed with the verse from Ecclesiasticus that "wine measurably drunk and in season bringeth gladness to the heart and cheerfulness to the mind." He had held the opinion until the last few years that prohibition or any other drastic interference was wrong. During recent years he had traveled a long distance and had seen large numbers of men congregated together and working under peculiar circumstances of stress and strain. He had had command of and responsibility for varying numbers of men. On returning home to a country where the old liquor acts were still in action, he had noted more drunkenness and the results of drunkenness than in Egypt, England, Ireland or South Africa. He had been so impressed by this experience that, although he still liked his "spot," his vote would go for prohibition. Dealing with objections, he said that prohibition was stated to interfere with the liberty of the subject. But the same might be said of the sale of opium or other drugs, or quarantine. It was said to be unworkable, but it had worked very well in Mohammedan countries and in some American states. A discussion followed in which all the speakers favored prohibition. The motion was then carried unanimously that the metropolitan members of the Queensland branch of the British Medical Association, at a special meeting called to consider the liquor referendum, endorse prohibition. It was then moved and carried that a referendum of all the members of the Queensland branch of the British Medical Association be taken on the question.

### A Guy's Man on the Johns Hopkins Hospital

A letter from an anonymous Guy's man who has been admitted as an intern to the Johns Hopkins Hospital appears in *Guy's Hospital Gazette*. Having described the course of study pursued there, he ends with a comparison between the systems of teaching at what may be regarded as the most famous examples of the American and the English hospital:

"The whole intellectual atmosphere is as stimulating as the climate is depressing. Yet there is something missing which we have at Guy's and they have not, some intangible quality the lack of which is felt more plainly than it can be described. Perhaps the scrupulous attention to detail is achieved at some sacrifice of general comprehension, and the desire for minute accuracy leads to a suspension of judgment in diagnosis which we, in our British manner, would call unsporting. Perhaps it is that the bustle and rush of competition and the grind of elaborate routine leave room for too little of the friendly personal relations which obtain between the house physician and the Borough (the name of the district of London in which Guy's Hospital is situated). Moreover, the men in the house allow very little time for relaxation; the presence in all parts of the hospital of megaphone attachments, from which his name is called from a central telephone office if he is wanted, allows the house officer little rest; meals are hurried through on the way to more work, and shop is talked between mouthfuls. Purely scientific achievement brings its own rewards, but to the ordinary mortal half measure satisfaction; one feels sometimes that a little bread throwing at the residents' table would be all to the good. How far the finished product of the Johns Hopkins Hospital would be suited for consulting work in England it is hard to say. He strikes one as being almost too dependent on minute laboratory examinations. The many special tests which he has been trained to consider essential before pronouncing a definite opinion would not appeal to the general practitioner or his patients. But it is to be remembered that the medical education of the lay public here is in striking contrast to that of Great Britain. The casual laborer is not content with a "bottle of medicine," but expects a systematic physical examination. Every man in the street knows the meaning of the terms "blood pressure" and "Wassermann test." The high standard of scientific work which obtains here must depend to a large extent on financial resources. There are many whole-time workers in departments of both teaching and research; laboratories are excellently equipped, not only with apparatus, but with skilled technicians. Here scientific medicine is practiced and taught under optimum conditions. High ideals are attained and high standards arrived at. It is a great place to work in, and the kindness of the residents makes it a pleasant place to live in—in spite of the climate."

## MEXICO CITY

*(From Our Regular Correspondent)*

Sept. 12, 1920.

### Plague and Yellow Fever

The outbreak of plague which began at Vera Cruz in the latter part of last April may now be considered as ended, since the last case of the disease occurred on June 30. At this date there are no cases in the pesthouse, and the examination of rodents continues to be uniformly negative so far as microscopic plague lesions or *B. pestis* are concerned. Without reflecting on the influence exerted on this result by the energetic antiplague campaign, it seems that one of the factors involved in the success was the high temperature at Vera Cruz, which probably attenuated the virulence of the plague bacillus. This assertion is based on the fact that after inoculations were made on guinea-pigs with the germ isolated from the Vera Cruz patients, these animals lived five days and even longer. Orders have been issued to stop the campaign, although measures will still be enforced to prevent a new importation of the disease, taking into consideration that some cases of plague still recur in American gulf ports. In the antiplague campaign a very active part was taken by the Citizens' Committee on Public Health, consisting of the most prominent persons of Vera Cruz, which will be continued permanently. To wind up its work this committee has decided to present a medal and a diploma to Mr. Foster, the American consul, as an acknowledgment of his services. Dr. Michel, the sanitary representative of the American government and a faithful co-worker in the plague campaign, will also receive some acknowledgment, although its form has not been decided as yet.

Yellow fever is still present at Vera Cruz, although the type of the disease is not so severe. So far eighty-four cases with twenty-seven deaths have been reported, and there remain seven patients under treatment. The campaign against this disease has been pushed in every possible way: oiling of lagoons, ponds and pools, so abundant at Vera Cruz and its suburbs, and also other rain receptacles; isolation of patients as soon as discovered, and the other measures previously reported. It has been impossible to try prophylactic

vaccination on a large sale, as the vaccine was soon exhausted and the germs in Mexican laboratories show very little vitality. It has therefore been necessary to wait until the *Leptospira* cultures made recently from guinea-pigs inoculated with blood from the Vera Cruz patients show a sufficient growth for the preparation of the vaccine (at least three weeks, according to Noguchi's advice). The national department of public health sent a cablegram to the International Health Board of the Rockefeller Foundation, asking a supply of antileptospira serum. The foundation, however, has been unable to send this on account of having fulfilled requests from Guatemala and El Salvador. We hope, however, to receive shortly a supply of the serum which, according to Dr. Heiser of New York, has fulfilled all hopes. This seems proved by the experience in Peruvian patients treated with it. Meanwhile the use of neo-arsphenamin is being continued. In Tuxpan and Puerto México (Vera Cruz), cases of "black vomit" have been reported. In the first town there have been seven cases and two deaths, and in the second only one case, which ended in death. Outside the state of Vera Cruz there have been reported four suspected cases of the same disease in the city of Culiacán, state of Sinaloa. In view of this alarming situation the national department of public health has multiplied its activities, trying to combat the disease as soon as it has been reported, trying to prevent the spread of the epidemic and urging the people of the invaded and threatened regions to cooperate in the eradication of the disease. At Mérida and Progreso (state of Yucatán) no new cases have occurred, and Dr. Hernández Fajardo, of the first of these two cities, reports good results with Noguchi's serum in two cases in which there was used some which was presented by the New York bacteriologist when he was there last. In the municipality of Peto, in the same state, two other cases of yellow fever have been reported.

After isolating *Leptospira* first from a guinea-pig infected with patient's blood and then from human tissue, Dr. Pérez Grovas has begun to study the agglutination of these germs by the serum of yellow fever patients in order to find some early and easy diagnostic procedure.

### The Department of Public Health

This governmental agency has begun a period of decided and beneficent activity in response to an invitation of the American Public Health Association. Dr. Alfonso Pruneda, secretary of the department, was designated to represent the latter at the meeting which will be held in these days in the city of San Francisco. Dr. Pruneda will present to the public health association a report on antiplague measures, another on the yellow fever campaign and another specifying the plans under consideration to conduct campaigns against malaria, hookworm infection and other parasitic diseases of the gastro-intestinal tract that prevail so much in this country. The destruction of the anopheles mosquito by means of bats, which is reported to have given good results at San Antonio, Texas, and other places, is one of the measures being studied by the board of public health, which has already communicated with Dr. Campbell requesting practical details regarding the breeding of these animals. The department has also invited applicants for the position of special delegate in the city of New Orleans to show their competence in a special examination. Besides possessing necessary medical knowledge, they must speak English. The appointee will receive a monthly salary of $500, and must agree to take a graduate course in hygiene and public health in one of the New Orleans schools, besides observing conditions on Mexican-bound ships. The creation of this position has been due to express orders from the president of the republic, who has in mind the training of young physicians in these subjects. As soon as possible, other physicians will be sent to American universities to specialize in public health.

The Rockefeller Foundation has informed the department of public health that it will provide in the United States a fellowship in bacteriology in public health for a Mexican physician, and the president of the republic has decided to accept this meritorious offer, taking upon himself the duty of designating the appointee. One individual who took an active part in this matter, which had been previously initiated by other persons, was Dr. A. R. Goodman of the American embassy. The carrying out of this plan, which begins the wider cultural interchange between the two countries, often advocated by THE JOURNAL, not only is advantageous for this country but also implies closer relations between the neighboring countries. This, in the end, will be profitable for the United States, as all public health advance results sooner or later in better commercial relations.

### Personal

Dr. Alfredo Caturegli has resigned the financial agency of Mexico in New York, and will be charged with another important duty.——After a long absence, Dr. Fernando Zárraga has returned to this country from Los Angeles, where he practiced his profession. Dr. Zárraga's friends gave him a banquet, and he has been appointed professor of obstetrics in the school of medicine, a position he filled several years ago with great honor.——Dr. Alvaro Torre Díaz has been designated Mexican minister to Brazil, having already left for Rio de Janeiro. He formerly occupied a similar position in Washington.——Dr. Donato Moreno, former professor of anatomy, has been elected governor of the state of Zacatecas.——Dr. Carl Michel (U. S. P. H. S.) still remains at Vera Cruz engaged in the campaign against yellow fever.——Dr. Juan Graham Casasús has been placed in charge of the campaign against yellow fever at Vera Cruz.

## BELGIUM

*(From Our Regular Correspondent)*

Sept. 1, 1920.

### First Congress on Medical History

The first Congress on Medical History was held in Antwerp, early in August, thanks to the initiative of Dr. Tricot. The occasion served to bring together the principal historians of Belgium and foreign countries, among whom might be mentioned Drs. Heger of Brussels, Alcalde and Albiñana of Madrid, Thompson of London, and Laignel-Lavastine of Paris.

#### THE HISTORY OF ALCOHOLISM

Professor Jeanselme of the Paris medical faculty gave a detailed account of the relation of wine-growing to the spread of alcoholism during the settlement of ancient Gaul by the barbarians from the fifth to the tenth centuries. Quoting from Tacitus and Cicero in support of his thesis, he showed the excesses of intemperance of the Germanic tribes. The Nervi, among others, tried to restrict drunkenness by means of special edicts, but without success. Early in the second century the Romans introduced wine-growing into Narbonne, whence the industry traveled north in the third century. In the fifth century Bordeaux was literally covered with grapevines, and grapes were planted in Poitiers, Angers and the whole Champagne region in the sixth century, though our ancestors for a long time still retained their preference for cerevisa, cider and mead. However, wine entailed and spread drunkenness among the barbarians and this was still more accentuated among the Germans, notwithstanding the edicts of Charlemagne which were designed to regulate the drink evil.

### THE CARE OF THE INSANE IN PARIS

The care of the insane of Paris during the eighteenth century was the subject of special study by Fosseyeux. In 1791 there were 1,333 insane patients in the hospitals of Paris, under rather lamentable conditions. At the Hotel Dieu, insane patients were kept for only three months, after which they were transferred to Bicêtre or the Salpêtière. In those days lunatics were considered objects of ridicule, and the mortality at Bicêtre was frightful. At the Salpêtrière, the insane were kept in chains, their beds consisted of some putrid straw, and their food was passed to them through the bars of their prison. Fragments from an old detailed report gave a realistic picture of the appalling conditions.

### POPULAR MEDICINE

Dr. Delaunay of Le Mans reviewed the history of popular medicine and quackery in France during the eighteenth century. Popular medicine had its roots in primitive traditions, while the religious pilgrimages caused the wholesale erection of the shrines, fountains, arbors, etc., where the faithful invoked the saints in aid of healing their maladies. The empirics meanwhile continued their evil practices, and all efforts to restrict these proved vain. Even the hangman himself practiced medicine by selling pieces of the noose and bones of the executed, as well as objects which had done service in the torture.

### SUCCESS OF THE CONGRESS

It may be of interest to remark that this initial meeting was highly successful, in the opinion of foreign participants. In fact, the small historical exhibition that had been set up at the Maison des médecins, in the words of more than one spectator should serve as a nucleus for the eventual establishment of a museum of the history of medicine. Moreover, this will not be the least accomplishment of the Cercle médical of Antwerp in having instituted this congress on the occasion of the tercentenary of its own foundation, for it has been decided to hold a second congress in Paris in 1921, and favorable action was taken on more suggestions than had been even remotely hoped for. The most important among these were the suggestion of Professor Giordano that a federation be formed of all countries represented at the congress and that a bulletin be issued under its auspices for the purpose of centralizing all work related to medical history, and the proposal of Professor Guiart to study in a systematic way the great epidemics that have visited humanity in the course of the ages.

## BERLIN

*(From Our Regular Correspondent)*

Aug. 27, 1920.

### Reform of the Medical Curriculum

The conviction entertained by many university lecturers and medical practitioners that some improvement was necessary in the methods of training medical students was strengthened by the experiences of the war. Professor Schwalbe, editor of the *Deutsche medizinische Wochenschrift*, published an essay in 1918, in which he called attention to the inadequacy of the German system of medical education and made certain proposals for its improvement. The essence of his remarks may be briefly summarized as a criticism that too much time was given to the theoretical sciences at the expense of practical exercises, and that, moreover, the scientific instruction itself could be improved in certain directions. The main question was whether the so-called practical year, which followed the medical examinations after the termination of the university instruction, should be maintained in the face of the severe criticism against this arrangement in the last few years. The courses of instruction in the natural sciences demanded improvement, as medical students received instruction in the natural sciences in conjunction with students of chemistry, physics, pharmacy, etc., from members of the science faculty, and not from medical teachers. Too much of their time was devoted to pure science without regard to its medical importance. Schwalbe suggested that these courses be given by medical instructors and that the medical students be assigned classes apart from other students. Other demands related to improving the clinical training so that the students might receive practical preparation for their future professional careers, and not merely attend the clinics as spectators, as has been the common custom. For this purpose the students should serve as assistants (famuli) in the various clinics, principally in the main clinics (medical, surgical and gynecologic and obstetric) and for shorter periods in the special clinics, so that the student might learn at least the elementary diagnostic and therapeutic principles of the specialties. The theoretical instruction in pathologic physiology, social medicine, medical ethics and medical history should be extended, while the courses in anatomy, physiology and other sciences should be purged from all matter superfluous to the future practitioner of medicine or of interest only to specialists and scientific investigators. With slight modifications, these suggestions were submitted at the congress of the Deutscher Aerztevereinsbund in 1919.

After the medical congress, there appeared a great number of articles on the subject, and members of the medical faculties especially made many divergent suggestions. Definite action was taken at the fourth congress of medical faculties held at Halle-on-the-Saale, Jan. 30-31, 1920. The principal decisions related to the following demands: abolishment of the practical year (only a minority favored retention or shortening), and in its place extension of the university course to twelve semesters and obligatory nursing service during two months of the first semester.

The necessity for more thorough practical training is, however, recognized everywhere. Five semesters will be devoted to preclinical studies. The natural sciences will still be taught by members of the science faculty, but particular reference will be had to medicine. Special instruction in zoology and botany will be continued, but with omission of the systematic details. It was unanimously agreed to decrease the number of hours devoted to anatomy. The course in physiology will be more intensive, and a course in psychology will be introduced after the preliminary examinations. Optional attendance on lectures in philosophy will be made feasible by suitable arrangement of the lecture hours. In lieu of the practical year, the students will be given more thorough practical training by compulsory service as assistants at the clinics, hospitals and maternity institutes during the clinical semesters. This service will be absolved during the vacation periods, and will comprise four months in medical, three months in surgical, and three months in gynecologic and obstetric clinics. Pathologic physiology will be made an independent subject, but social medicine will be added as a course in the curriculum, and will include insurance medicine and medical economics. Special lectures will be given on the history of medicine. A standard curriculum for all German universities is declared to be desirable.

All essential demands will be settled by subsequent conferences between practicing physicians and university instructors. The governments of the various states have circulated questionnaires regarding the main points at issue, and the material obtained in response to these will be submitted to a commission composed of representatives of the government, universities, physicians and students, which will make final decisions regarding the reform of medical education. It is to be hoped that this goal will be attained by the beginning of the next year.

## Marriages

ROY MACLEAY FORTIER, Major, M. C., U. S. Army, to Miss Theodora Katherine Henckels of Washington, D. C., September 8.

KENNETH BLAKE KEELER, Concord, Mich., to Miss Laura Karine Anderson of Maywood, Ill., September 11.

BIRKHEAD MACGOWAN to Miss Mary Barbara Morris, both of Baltimore, September 6.

MILBANK JOHNSON, Los Angeles, to Miss Isabel Simeral of Cleveland, September 9.

## Deaths

**Benjamin Franklin Baer** ⊕ Philadelphia; University of Pennsylvania, Philadelphia, 1876; aged 74; a veteran of the Civil War; one of the founders of the Polyclinic Hospital; a member of the American Gynecological Society and of the Obstetrical Society of Philadelphia; died at his home, September 11, from bronchial pneumonia.

**Henry William Harrison,** Roanoke, Va.; Medical College of Virginia, Richmond, 1882; College of Physicians and Surgeons in the City of New York, 1884; aged 71; a member of the Medical Society of Virginia; a Confederate veteran; at one time professor of ancient languages in the University of Virginia; died, September 1.

**Horace Carlisle Robles,** Albany, Ga.; Atlanta (Ga.) Medical College, 1914; aged 30; a member of the Medical Association of Georgia; scientific assistant, U. S. P. H. S.; while diving into Kinchafoonee Creek sustained injuries from which he died in Phoebe Putney Memorial Hospital, September 14.

**James Moore May,** Beaver Falls, Pa.; Bellevue Hospital Medical College, 1870; aged 70; commander of the One Hundred and Third Pennsylvania Infantry during the Civil War; one of the organizers of the Beaver Valley General Hospital, New Brighton; died, September 13.

**William Edward Nichols,** Tulsa, Okla.; Rush Medical College, 1894; aged 47; a member of the Oklahoma State Medical Association; Captain, M. C., U. S. Army, and discharged Dec. 3, 1918; died, September 8, from injuries received when his automobile collided with a sand wagon.

**Charles Stuart Brady,** Union Hill, N. J.; Hahnemann Medical College and Hospital, Chicago, 1900; Captain, M. C., U. S. Army, and discharged Dec. 16, 1918; for several months on duty with the American Red Cross in Siberia; is reported to have died at Riga, Russia, recently.

**John S. Stearns,** Port Allegany, Pa.; University of Buffalo, N. Y., 1872; aged 72; a member of the Medical Society of the State of Pennsylvania; died, September 7, from a gunshot wound of the head, self-inflicted, it is believed, while despondent on account of ill health.

**Jake Henry Roszelle,** Salisbury, N. C.; North Carolina Medical College, Charlotte, 1912; aged 32; Lieutenant, M. C., U. S. Army, and discharged February 11, 1919; died in a hospital in Charlotte, September 12, following an operation for intestinal obstruction.

**James Thomas Gibson,** Yonkers, N. Y.; Bellevue Hospital Medical College, 1886; aged 64; a member of the Medical Society of the State of New York, consulting physician to St. Joseph's Hospital; died in Ramsey, N. J., September 16, from heart disease.

**Edward J. Barcal,** East Palestine, Ohio; Chicago Medical College, 1893; aged 47; a veteran of the Spanish-American War; acting assistant surgeon, epidemiologist, U. S. P. H. S., died in Chicago, September 8, from gangrene of the lower extremity.

**William Edwin Gregory** ⊕ Stroudsburg, Pa.; University of Pennsylvania, Philadelphia, 1877; aged 66; at one time a member of the Pennsylvania State Legislature and of the Stroudsburg Board of Health; died, September 9, from myocarditis.

**Edwin James Rothwell,** Denver; University of Michigan, Ann Arbor, 1875; aged 78; a member of the Colorado State Medical Society, and for twenty-five years treasurer of the Denver County Medical Society; died, September 7.

⊕ Indicates "Fellow" of the American Medical Association.

**Samuel Philip Heilman,** Lebanon, Pa.; University of Pennsylvania, Philadelphia, 1867; aged 78; a member of the Medical Society of the State of Pennsylvania; died, September 11, following an operation for biliary calculus.

**Isaac M. Calhaway** ⊕ Shreveport, La.; Tulane University, New Orleans, 1893; aged 52; for eight years resident physician at Charity Hospital, Shreveport; died in a sanatorium in Shreveport, September 8, from pneumonia.

**Thomas B. Luxford,** Princess Anne, Va.; Medical College of Virginia, Richmond, 1895; aged 49; a member of the Medical Society of Virginia; died, September 8, from an overdose of morphin taken to relieve pain.

**Lemon Thomson,** Glens Falls, N. Y.; Albany (N. Y.) Medical College, 1882; aged 63; founder of the first hospital in Glens Falls; health officer of Glens Falls for twenty-five years; died suddenly, September 15.

**William C. Steele** ⊕ North Canton, Ohio; University of Wooster, Medical Department, Cincinnati; aged 68; a practitioner of North Canton for forty years; died, August 6, from abdominal aneurysm.

**Henry W. Earthman,** Conroe, Texas; Hospital College of Medicine, Louisville, 1898; aged 49; a member of the State Medical Association of Texas; died, August 3, from nephritis.

**John Morgan,** New York City and Hadlyme, Conn.; Yale University, New Haven, Conn., 1869; aged 75; a member of the Massachusetts Medical Society; died, August 28.

**Edwin Edward Wuttke,** Sumner, Iowa; University Medical College of Kansas City, 1906; aged 31; lieutenant, M. C., U. S. Army, and discharged, April 19, 1920; died, June 5.

**Paul Pollach,** Chicago; Hering Medical College, Chicago, 1895; aged 59; at one time professor of nervous and mental diseases in his alma mater; died, September 22.

**Richard J. Hamlen,** Detroit; Michigan College of Medicine and Surgery, Detroit, 1892; aged 58; a member of the Michigan State Medical Society; died, September 8.

**John P. Matthewson,** Paris, Tenn.; University of Nashville, Tenn., 1866; aged 80; surgeon in the Confederate service during the Civil War; died, September 10.

**Francis Nathaniel Mattoon,** Columbus, Ohio; Starling Medical College, Columbus, 1873; aged 77; a veteran of the Civil War; died, September 13, from paralysis.

**Henry S. Bennett,** Jonesville, La.; Memphis (Tenn.) Hospital Medical College, 1907; aged 42; died in New Orleans, La., June 18, from cerebral hemorrhage.

**John Henry Cotter,** Brooklyn, N. Y.; Albany (N. Y.) Medical College, 1894; aged 52; died in the Brooklyn Hospital, September 15, from heart disease.

**Robert Barr Judge,** Philadelphia; Jefferson Medical College, Philadelphia, 1887; aged 51; died, September 8, from pernicious anemia.

**William S. Vickrey,** Bowie, Texas; Worthington Medical College, 1879; aged 67; died, June 17, from acute dilatation of the heart.

**John Wallace Cole,** Otto, Texas; Vanderbilt University, Nashville, 1884; aged 61; died in Southmayd, Texas, August 17.

**Richard Wiltz Vincent,** Orange, Texas; Tulane University, New Orleans, 1905; aged 50; died, August 9, from angina pectoris.

**Nathan Elbert Eddy,** Auburn, W. Va.; University of the South, Sewanee, 1899; aged 41; died, August 6, from angina pectoris.

**John Mason King,** Fort Smith, Ark.; University of Louisville, Ky., 1892; aged 54; died, August 24, from toxic jaundice.

**John Harris Comfort,** Port Dalhousie, Ont.; Victoria University, Cobourg, Ont., 1862; aged 93; died September 6.

**Alonzo T. Conley,** Cannon Falls, Minn.; State University of Iowa, Iowa City, 1874; aged 72; died, September 11.

**Samuel M. Hunter,** Oklahoma City, Okla.; Louisville (Ky.) Medical College, 1879; aged 66; died, August 31.

**John W. Diffenderfer,** Bellwood, Pa.; Kansas City (Mo.) Medical College, 1886; died, August 6.

**Samuel Young,** Halls, Tenn.; University of Louisville, Ky., 1890; aged 78; died, July 4.

**Correction.**—The notice of the death of Dr. Jacob H. C. King, Greenwood, Ark., which appeared in THE JOURNAL of September 18, page 829, is incorrect. This should have had reference to Dr. John Mason King, Fort Smith, whose obituary notice appears in this issue.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

## MORE MISBRANDED VENEREAL NOSTRUMS

**Injection Malydor.**—The Williams Mfg. Co., Cleveland, Ohio, consigned a quantity of "Injection Malydor" that was shipped from Ohio to California in May and December, 1918. The product was recommended as a treatment for venereal diseases and piles. The federal chemists reported that it consisted essentially of a dilute watery solution of boric acid, phenol, a zinc salt, glycerin, acetanilid and unidentified plant material. The therapeutic claims made for the preparation were declared false and fraudulent. In May, 1919, the court entered judgment of condemnation and forfeiture and ordered the product destroyed.—[*Notice of Judgment No. 7395; issued August 31, 1920.*]

**G Zit.**—The Stearns-Hollinshead Co., Inc., Portland, Ore., shipped in April, 1917, a number of packages of "G Zit Complete—Stearns" and "G Zit Antiseptics." The first named product were bougies which the federal chemists reported consisted essentially of cacao butter and a silver compound, probably nucleinate; the "antiseptics" were reported to be composed essentially of oils of copaiba and cubebs and a compound of sulphur. The stuff was declared misbranded because of false and fraudulent claims to the effect that the stuff was a treatment for gonorrhea, gleet and certain other diseases. In October, 1919, the court entered judgment of condemnation and forfeiture and ordered the stuff destroyed.—[*Notice of Judgment No. 7373; issued August 31, 1920.*]

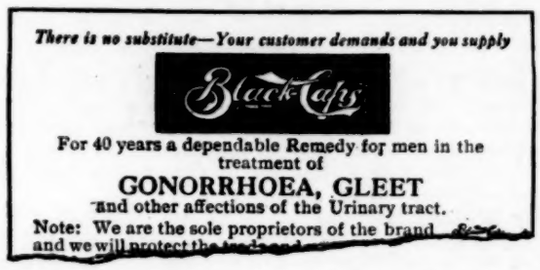
**Hinkle Capsules.**—The Hinkle Capsule Co., Mayfield, Ky., shipped in November, 1918, a quantity of this product from Kentucky to Oklahoma. The stuff was labeled "For the treatment of Gonorrhea, Gleet, Leucorrhea, kidney and bladder affections, etc." The federal chemists report that it consisted essentially of powdered cubebs, copaiba and cannabis indica with indications of oil of sandalwood and pepsin. The therapeutic claims were declared false and fraudulent. In October, 1919, the court entered judgment of condemnation and forfeiture and ordered the product destroyed.—[*Notice of Judgment No. 7379; issued Aug. 31, 1920.*]

Are Your Kidneys
Or Your Bladder
Troubling You?
Do you ever have any burning sensations, mucous discharges or is your bladder ever irritated? If so go to your druggist at once and get a $1.33 box of these
HINKLE'S CAPSULES
the prescription remedy of a successful physician, and start taking them promptly according to direc

**Tisit-Pearls.**—A quantity of this product consigned by the S. Pfeiffer Mfg. Co., East St. Louis, Ill., and shipped in June, 1918, from Illinois into Pennsylvania was declared misbranded. The federal chemists reported that the stuff consisted essentially of a mixture of oil of sandalwood, balsam of copaiba, oil of cinnamon and a fixed oil. The stuff was sold for the alleged cure of gonorrhea and gleet and the claims made for it were declared false and fraudulent. In June, 1919, the court entered judgment of condemnation and forfeiture and ordered the stuff destroyed.—[*Notice of Judgment No. 7330; issued Sept. 3, 1920.*]

**Tisit.**—A quantity of this product consigned by the S. Pfeiffer Mfg. Co., East St. Louis, Ill., and shipped in April, 1918, was declared misbranded. Analysis showed that Tisit was a yellow colored watery solution of zinc sulphate, thymol, alum and glycerin. The federal authorities charged that it was falsely and fraudulently represented as a treatment for gonorrhea, gleet and genito-urinary disorders, and that the claims had been applied to the article with a knowledge of their falsity for the purpose of defrauding purchasers. No claimant having appeared, judgment of condemnation and forfeiture was entered in June, 1919, and the court ordered that the product be destroyed.—[*Notice of Judgment No. 7401; issued Sept. 13, 1920.*]

**Black-Caps.**—In April, 1919, a quantity of this product was shipped from Ohio to California, being consigned by the Safety Remedy Co. of Canton, Ohio. The federal chemists reported that the preparation consisted essentially of copaiba, cubebs and saw palmetto. The stuff was sold as a cure for venereal diseases and the curative claims made for it were declared false and fraudulent. In May, 1919, the court entered judgment of condemnation and forfeiture and ordered the stuff destroyed.—[*Notice of Judgment No. 7396; issued August 31, 1920.*]


There is no substitute—Your customer demands and you supply
Black-Caps
For 40 years a dependable Remedy for men in the treatment of
GONORRHOEA, GLEET
and other affections of the Urinary tract.
Note: We are the sole proprietors of the brand

**Hexagon.**—In April, 1919, a quantity of "Hexagon" was shipped from Missouri to Oklahoma. The article was labeled in part:

"Injection. '4 Ounces Hexagon, for Gonorrhoea and Gleet. . . . Will not cause Stricture. . . . Acts quickly and surely. . . . Quick Acting — 1 to 5 days. Prepared by Montebello Laboratories, Billy Grant, Ph.C., 622 Wyandotte St., Kansas City, U. S. A.' Capsules. 'Hexagon capsules, to be taken in half glass of water twice a day in combination with injection.' "

The federal chemists reported that the "injection" consisted essentially of a rose-scented, watery solution of zinc sulphocarbolate, boroglycerid and undissolved bismuth subnitrate and that the "capsules" contained hexamethylenamin. The products were sold as "a proven, quick acting, harmless treatment for Gonorrhea, Gleet and Strains." The therapeutic claims were declared false and fraudulent and in July, 1919, the court entered judgment of condemnation and forfeiture and ordered the product destroyed.—[*Notice of Judgment No. 7351; issued August 31, 1920.*]

**Hyatt's A. B. Balsam.**—In March, 1919, a quantity of this product was shipped from New York to Pennsylvania having been consigned by the C. N. Crittenton Co., of New York City. The article was labeled in part:

"A depurative and Alterative Compound . . . for obstinate, long-standing cases of syphilis, ulcers, gout, rheumatism, skin diseases, etc." ". . . more especially designed for severe and obstinate cases of Rheumatism, Chronic Ulcers and other blood diseases."

The federal chemists reported that analysis showed the stuff to consist essentially of potassium iodid, alum, Epsom salt, plant extractives and unidentified alkaloids, sugar, glycerin, and 10.55 per cent. alcohol. The curative claims were declared false and fraudulent. In July, 1919, the court entered judgment of condemnation and forfeiture and ordered the product destroyed.—[*Notice of Judgment No. 7372; issued August 31, 1920.*]

**DuQuoin's Compound Santal Pearls.**—Wm. R. Warner & Co., Inc., New York City, consigned a quantity of this product which was shipped in April, 1919, from New York to Pennsylvania. Analysis by the federal chemists showed the product to consist essentially of a cinnamon-flavored mixture of santal oil and copaiba. The therapeutic claims made for the product as an alleged remedy for gonorrhea and gleet were

declared false and fraudulent. In July, 1919, judgment of condemnation and forfeiture was entered and the court ordered the product destroyed.—[*Notice of Judgment No. 7371; issued August 31, 1920.*]

## Correspondence

### IMMUNIZATION AGAINST PLAGUE: EXPERIENCE OF A MEDICAL MISSIONARY WITH HAFFKINE'S VACCINE

*To the Editor:*—I have just read the interesting editorial on "Immunization Against Plague: An Argument for Controlled Experiment," in my last copy of THE JOURNAL, June 19, 1920. As I have lived almost constantly for the last eighteen years in the plague-stricken districts of India, and have performed nearly 30,000 inoculations with Haffkine's vaccine prepared at the government laboratory at Parel, Bombay, the subject of the editorial is of deep interest to me. The plea for accurately controlled experiments to determine the value of therapeutic measures cannot be made too strong or be reiterated too often. And the necessity for it grows apace with the ever-widening range of new agencies constantly pressing forward to assist us, or confound us, in our struggle with disease. As the limitations to our knowledge of the beneficial effects of so many therapeutic and prophylactic agencies are pretty closely paralleled by limitations to our knowledge of their harmful effects, we are justified only in a very robust skepticism toward all newcomers in these lines, unless special conditions offer opportunities for carefully controlled experiments. We certainly are under deep obligations to the scientists for constantly pointing out the importance of this attitude of mind, though, at the same time, all recognize that established knowledge of great value has now and then been acquired in departure from this rule.

Eighteen years ago, when I went to Ahmednagar, one of the plague districts of India, after two years' residence in another part of the country, I found the government offering Haffkine's vaccine as a prophylactic against the disease. As the disease seemed to respond to nothing in the way of treatment, and six or eight out of every ten persons attacked died, whether treated or not, we turned to this vaccine on such recommendation as the government had to offer, though statistics at that time were not such as to furnish any conclusive evidence as to the effects of vaccine. I inoculated between 500 and 600 persons the first year, not Europeans, but Indians, and was in close contact with them throughout the epidemic. The first striking impression I received regarding the effects of the inoculation was not from the number of inoculated persons who escaped infection, but from the clinical picture of the disease in the few attacks I was called on to treat among the inoculated. I have treated several thousand cases of bubonic plague, and I seldom have seen a case in an uninoculated person in which the first, and deep, impression on examining the patient was not that a desperately sick person was lying before me. As I have said, from two to four out of every ten I have seen with plague have recovered, but it has invariably been by a very narrow margin. In most striking contrast to this, I found in my first year's experience that the few cases that occurred among the inoculated, with a very few exceptions, presented a clinical picture of a very mild infection, with a temperature range from about 100 to perhaps 102, and little to give the patient distress besides the pain of the bubo. I say, with a few exceptions, for we never have failed in any epidemic to see now and then a rare case among the inoculated that was very severe and terminated fatally. But severe attacks among those inoculated with the regularly prescribed dose of the vaccine are certainly extremely rare.

As Ahmednagar was a city of 35,000 people, the few hundred inoculated that year made no impression on the progress of the epidemic; but after five or six months it gradually died out. The following year another epidemic occurred, and we resorted again to inoculation so far as we could induce the natives to submit to it. This vaccine was by that time being used in many different places in the country, and it is common knowledge in India today how its use has steadily, and enormously, increased in spite of deep prejudice against it on the part of the vast majority of Indians. This vaccine, with attempts at rat extermination, are the two recognized weapons we have for fighting the disease. We do not have pneumonic plague as an epidemic disease.

Thirteen out of the last eighteen years I have worked through plague epidemics. The epidemics last from four to six months, beginning gradually, with an occasional case in one section of the town, slowly spreading and increasing in the number of daily attacks, until the fastigium is reached after perhaps six weeks or two months. For a couple of months more it may remain at about the same height. Then it gradually dies out. We have used this vaccine in every epidemic I have worked in, and in my work as a medical missionary I have been in the town daily among both the inoculated and the uninoculated. I have no intention of trying to prove the value of the inoculation by statistics, though the staff of the Bombay Government Laboratory, Parel, Bombay, is able to furnish voluminous figures on the subject for those who care for them. But from intimate observation our faith in the value of the vaccine is very strong. It is perfectly true that its effects are not lasting, and the necessity for reinoculation is a great drawback. But it does confer, in a large majority of cases, a high degree of immunity lasting through one epidemic. We also believe we find some traces of immunity in the second year. I have been inoculated with this vaccine myself eleven times in the last eighteen years.

Wai, where I have worked for the last twelve years, with the exception of two furloughs in America of about a year each, passed only one continuous twelve months without an epidemic in the eleven years preceding 1919. When we first came here the people were slow to consent to inoculation, but they have now come to accept it readily in large numbers. It is a town of 10,000 people. The census is taken with great care by the British government. In the epidemic of the winter months of 1916-1917 we inoculated 4,378 persons. In the epidemic of 1917-1918 we inoculated 4,831. I know positively that the inoculated were just as widely scattered through the town (through the infected areas, for all parts of the town were infected) and were of the same castes, same stations in life, sanitary surroundings, habits of life, and exposure to the disease, as the uninoculated were. In fact, they were really more exposed to the infection than the uninoculated, for it is always people in whose houses plague rats have actually died who come in largest numbers to be inoculated. And the inoculated now are much less afraid of the disease than those who have not been inoculated, and take far less pains to avoid houses where rats have died. The uninoculated commonly endeavor to move out of a house known to be infected (where rats have died), but the inoculated in great numbers live on in their homes, throughout the epidemic, when dying rats are certainly leaving the hungry fleas with only the inhabitants of the houses to feed on. In 1916-1917, among less than 6,000 uninoculated persons in Wai, there were 275 attacks of plague and 167 deaths, and among 4,378 inoculated there were only 39 attacks and 10 deaths. In 1917-1918 among the uninoculated, which were less than 6,000 people, there were 76 attacks and 47 deaths, while among 4,831 inoculated there were 17 attacks and 2 deaths. These

figures are from careful daily house to house inspections, checked, as to deaths, by burning ghats reports. As cremation on the burning ghats is the regular method of disposing of the dead, accurate records as to the number and name of the dead are easily kept. The municipal council, of which I am a member, takes great pains to keep accurate figures regarding these facts. Of course, no figures from a few small epidemics of this kind establish final facts as to the efficacy of such an agency; but these figures correspond with our experience year after year, and they come from events that have worn down prejudice among the people until the whole initiative for inoculation now comes from them, not from us. I have had the experience in later years of seeing great crowds gather around an inoculation place, clamoring for admission and actually pulling one anothers' coats off in the struggle to enter and get their turn to be inoculated, and this where, in former years, it took great persuasion at public meetings, and doles of one or two days wages for the poor, to get even a few to submit to inoculation. I have inoculated more than a thousand in a single day, with many more waiting to be done when darkness brought our work to an end. Why every one does not get inoculated might be a natural question; but human, and Eastern, inertia is the sufficient answer, even if it were not a wholly impossible undertaking to inoculate every year the million who occupy the plague infected areas.

LESTER H. BEALS, M.D.,
Wai, Satara District,
Bombay Presidency,
India.

Medical Missionary, American Board of Commissioners for Foreign Missions.

### WHY LEFT LIGHT FOR READING PURPOSES?

*To the Editor:*—I desire here to correct what I believe to be a misapprehension as to the proper light that is called hygienic for reading purposes. I have seen the statement made in the columns of THE JOURNAL, in an article published within the last six months, and a similar statement published in the last issue of the *American Red Cross Magazine*, to the effect that (among other things) the light for reading purposes should come from the left side. I have seen this statement in books, heard it in school, and seen it so often repeated in magazine articles that I believe the idea that light for reading purposes should come over the left shoulder or from the left side, preferably, is generally accepted, even by the profession, as an indisputable fact, a simple, obvious truth.

With an apology in advance, for my confessed ignorance on this subject, I make free to state that I know of no anatomic, physiologic or psychologic reason for preferring light to come over the left shoulder rather than the right for reading purposes. I surmise that this popular conception had its origin in the fact that most of us are right handed, and that in writing, a shadow would be cast on the written characters by the hand that writes, when the light comes from the right side. With the light coming from the left side, however, no such objection prevailed, and the trail left by the pen or pencil was found to be well illuminated. From the obviously best method of lighting for writing purposes, it would appear that the dictum as to the proper lighting for reading purposes has been accepted unquestioned. The time spent by the average person in writing is so small a part of the time he spends in using his eyes for all purposes that it is not conceivable that the average person develops a more acute vision from left-hand illumination. It would seem to me, therefore, that it is a statement of the obvious that for reading purposes it is immaterial from which side the light comes, neither side to be preferred over the other; and that in the case of a left-handed person, for writing purposes, light from the right side is to be preferred.

SOL ROSENBLATT, M.D., Chicago.

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

### "INTERMITTENT TREATMENT WITH ANTIPYRETICS"

*To the Editor:*—May I ask for further definite information regarding Königer's article on "Intermittent Treatment with Antipyretics," abstracted from the *Münchener medicinische Wochenschrift* (The JOURNAL, Sept. 4, 1920, p. 709).

I infer from your abstract that the "profound effect on the progress of the disease" — tuberculosis — noted by Königer, is favorable. If my inference is correct, it becomes important to know what particular antipyretic he employs by preference, since the therapeutic effects of the various antipyretics could hardly be identical, varying in chemical composition and physiologic action as they do.

BOYD CORNICK, M.D., San Angelo, Texas.

ANSWER.—Königer says further in regard to the effect of antipyretics on the course of tuberculosis that such remedies, if administered intermittently, exert therapeutic effects that go far beyond symptomatic improvement. This applies, however, only to selected cases. In severe, steadily progressing cases, with high fever, it is useless to expect that any markedly favorable changes for the better can be brought about by the reactions produced by antipyretics. In mild cases these reactions are not infrequently followed immediately by an improvement in temperature and in the course of the disease, so that the causal connection seems well established. Occasionally, only a few reactions are required, but usually a considerable number of reactions are necessary to bring about lasting therapeutic effects. Since the identical antipyretic dose produces quite different reactions according to the activity of the disease process and the character and stage of the fever, it is necessary to consider carefully individual peculiarities to secure a proper gradation of the reactions. The length of the intermission, namely, will depend on the character and duration of previous reactions. A cautious procedure is that in which the several reactions are allowed to wear off before treatment is repeated, thus establishing intervals of from three to five days. If the reactions are weak, much shorter intervals are indicated. In his experiments, Königer confined himself to the following antipyretics in small doses: pyramidon, dosage, from 0.05 to 0.2 gm.; acetanilid, from 0.1 to 0.25 gm.; acetylsalicylic acid, from 0.25 to 1.0 gm., and quinin, from 0.25 to 0.5 gm.

### ALCOHOL, ARSPHENAMIN AND THE WASSERMANN TEST

*To the Editor:*—1. It is generally believed among physicians using arsphenamin and neo-arsphenamin that alcoholic drinks taken while under treatment with these drugs counteract their effect. If this is true, please give me the explanation as to why such is the case. 2. It is said that a positive Wassermann test becomes negative under the influence of alcohol. If this is correct, please inform me of the changes in the system that bring about this effect.

O. S. HARE, M.D., Bluefield, W. Va.

ANSWER.—1. The use of alcohol during arsphenamin treatment should be forbidden, because alcoholics are generally more susceptible to by-effects after arsphenamin injections. It is believed that this is probably due to the toxic effect exercised on the blood vessels that are already diseased, especially those of the kidneys. Possibly, too, the metabolism of the alcoholic person favors more rapid decomposition of the drug in the organs and tissues.

2. It has been stated that under the effects of alcohol a negative Wassermann reaction becomes positive. There is no evidence that the converse is true. The exact mechanism is not understood.

### PRONUNCIATION OF SALICYLATE

*To the Editor:*—To settle discussion, please pass upon the pronunciation of the word "salicylate."

C. D. CUDWORTH, M.D. Winsted, Conn.

ANSWER.—Almost all dictionaries now give the pronunciation sal'i-cyl-ate, with the accent on the first syllable. This has the advantage of emphasizing the derivation from *salix*, willow.

# Medical Education, Registration and Hospital Service

## COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 9-10. Sec. Reg. Bd., Dr. F. J. Stout, Brinkley. Sec. Electic Bd., Dr. C. E. Laws, Ft. Smith.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. C. B. Pinkham, 529 Forum Bldg., Sacramento.

CONNECTICUT: Hartford, Nov. 9-10. Sec. Reg. Bd., Dr. Robert L. Rowley, Hartford.

CONNECTICUT: New Haven, Nov. 9. Sec. Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Sec. Eclectic Bd., Dr. James E. Hair, Bridgeport.

DISTRICT OF COLUMBIA: Washington, Oct. 12-15. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.

FLORIDA: Jacksonville, Nov. 4. Sec., Homeo. Board, Dr. Geo. A. Davis, Sec., East Port.

GEORGIA: Atlanta, Oct. 12-14. Sec., Dr. C. T. Nolan, Marietta.

KANSAS: Topeka, Oct. 12-13. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, Nov. 2. Sec., Homeo. Board, Dr. F. H. Hardenstein, 702 Macheca Bldg., New Orleans.

LOUISIANA: New Orleans, Nov. 2-4. Sec., Dr. E. W. Mahler, 1551 Canal St., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Dr. Frank W. Searle, 140 Pine St., Portland.

MICHIGAN: Lansing. Oct. 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

NEBRASKA: Lincoln, Nov. 11-12. Sec., Mr. H. H. Antles, Lincoln.

NEVADA: Carson City, Nov. 1. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. R. E. McBride, Las Cruces.

OKLAHOMA: Oklahoma City, Oct. 13-14. Sec., Dr. James M. Byrum, Shawnee.

PHILIPPINE ISLANDS: Manila, Oct. 11. Sec., Dr. Fortunato Pineda, 610 Rizal Ave., Manila.

SOUTH CAROLINA: Columbia, Nov. 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St.. Columbia.

TEXAS: Dallas, Nov. 16-18. Sec., Dr. Thos. J. Crowe, 617-20 Trust Bldg., Dallas.

WEST VIRGINIA: Charleston, Oct. 12. Sec., Dr. S. L. Jepson, Charleston.

### Montana April Examination

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held at Helena, April 6-8, 1920. The examination covered 10 subjects and included 50 questions. An average of 75 per cent. was required to pass. Of the 17 candidates examined, 15 passed and 2 failed. One candidate was licensed by reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Columbian University | | (1897) | 92.1 |
| Hahnemann Medical College and Hospital, Chicago | | (1893) | 80.3 |
| Rush Medical College | (1903) 81.4, (1911) 77.9, | (1917) | 82.1, 84.5 |
| Johns Hopkins University | | (1919) | 78.9 |
| University of Minnesota Med. School | (1907) 85.2, | (1920) | 81, 83.6 |
| St. Louis College of Physicians and Surgeons | | (1909) | 77.6 |
| University of Pennsylvania | | (1903) | 78.7 |
| Chattanooga Medical College | | (1907) | 75.4 |
| Lincoln Memorial University | | (1916) | 81.9 |
| National University of Ireland | | (1916) | 90.1 |
| | FAILED | | |
| Loyola University | | (1917) | 64.1 |
| National Medical University, Chicago | | (1907) | 42.8 |

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Cooper Medical College | | (1909) | Washington |

### Indiana July Examination

Dr. W. T. Gott, secretary, Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, July 13-15, 1920. The examination covered 16 subjects and included 98 questions. An average of 75 per cent. was required to pass. Of the 31 candidates examined, all passed, including one osteopath. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Howard University | | (1920) | 90 |
| Hahnemann Medical College and Hospital of Chicago | | (1920) | 86 |
| Indiana University | | (1920) | 84, 85, 86, 86, 86, 86, 86, 86, 87, 87, 87, 88, 88, 88, 88, 88, 89, 90, 90, 90, 92. |
| University of Louisville | | (1920) | 88, 90 |
| St. Louis University School of Medicine | | (1920) | 88 |
| Eclectic Medical College | | (1920) | 90, 92 |
| University of Cincinnati | | (1920) | 87, 91 |

# Book Notices

REGIONAL ANESTHESIA (VICTOR PAUCHET'S TECHNIQUE). By B. Sherwood-Dunn, M.D., Officier d'Académie. Paris. Cloth. Price, $3.50. Pp. 294, with 244 illustrations. Philadelphia: F. A. Davis Company, 1920.

This book summarizes the writings of Victor Pauchet on the subject of regional anesthesia and of his experiences with it, together with those of P. Sourdat, J. Labouré, and those of the author, B. Sherwood-Dunn. The regional or nerve trunk method of local anesthesia is strongly favored by the author as compared with the infiltration tissue method. He uses procain solution with epinephrin except for anesthetizing the peritoneal ligaments, omental tissues and serovascular pedicles, when he often employs a 1 per cent. solution of quinin and urea hydrochlorid. He uses the latter solution, he states, following the advice of Crile. Through the misplacing of a period in the second paragraph on page 17 (line 8) a wrong idea is conveyed as to the quantity of 0.5 per cent. procain solution that may be safely used. The statements in the paragraph as punctuated would be extremely misleading to one seeking exact information as to the safety with which this solution may be employed. The author undoubtedly intended that it should read: "The high percentage solutions should be injected very slowly, and in amounts never exceeding 20 to 40 c.c. Of the 0.5 per cent. solution, we have employed, however, as much as 300 c.c. without any harm." An excellent description of the technic of anesthesia of the cranial nerves is given. The anesthesia of the fifth nerve and its branches is considered in detail. The author strongly recommends paravertebral anesthesia, which consists in bathing the thoracic and lumbar nerves at the intervertebral foramina with a solution of procain-epinephrin, and he considers paravertebral anesthesia preferable to infiltration of the nerves in the region of the operation. This also anesthetizes the viscera, through the anastomosis with the sympathetic nerves. He considers it the ideal regional anesthesia for the upper portions of the trunk. Intraspinal anesthesia is preferred for most intra-abdominal operations or extensive procedures on the lower extremities. The genito-urinary organs, which are supplied chiefly by the second, third and fourth sacral nerves, are thus anesthetized by the author: In thin subjects, the injections are made through the sacral foramina, the transsacral route; in stout subjects by inserting a needle anterior to the sacrum between it and the rectum, the presacral route. The book is a valuable reference work since it offers through the use of regional anesthesia in a majority of cases an effective anesthesia to those who become skilful in its use. Pauchet states that it may be used in 80 per cent. of cases. It is also a stimulus to the reader to increase continually the number of operations he is doing under local instead of general anesthesia.

MEDIEVAL MEDICINE. By James J. Walsh, K.C.St.G., M.D., Ph.D., Medical Director, Sociological Department Fordham University. Cloth. Price, $2.75. Pp. 221, with illustrations. New York: Macmillan Company, 1920.

Dr. Walsh needs no introduction as a writer on medical history topics. He has gathered here in a small volume many data on the medicine of the middle ages. The book is one of a series of historical manuals being issued by this publisher at a moderate price. The style of presentation is well written narrative, making the book easily readable.

SEXUAL IMPOTENCE. By Victor G. Vecki, M.D. Sixth Edition. Cloth. Price, $3 net. Pp. 424. Philadelphia: W. B. Saunders Company, 1920.

Dr. Vecki, in characteristically forceful manner, has written an excellent work on the subject of impotence. He discusses the condition as a clinical complex which necessitates for its diagnosis a complete physical and endocrine examination, as well as an examination of the urinary and sexual organs. Some sections, but particularly the one in regard to drugs should be greatly condensed. The chapters in regard to diagnosis, prophylaxis and treatment are especially good. All the necessary methods and technics are described fully. The perusal of these chapters emphasizes the fact that the man-

agement of a case of impotence presents quite a problem, and that its treatment necessitates a broad human sympathy, excellent general medical observation, and skill in the use of urethral diagnostic instruments. All the various methods of treatment are accurately and carefully described, so that any one can carry them out after a little study.

## Medicolegal

### Seller of Shaving Brush Not Liable for Anthrax

*(S. H. Kress & Co. v. Lindsey et al. (U. S.), 262 Fed. R. 331)*

The United States Circuit Court of Appeals, Fifth Circuit, in reversing a judgment obtained by the plaintiffs, who were the widow and the minor children of one Lindsey, holds that they could not recover, in an action on a breach of warranty alleged to have been made by the defendant, a mail-order concern, in the sale of a shaving brush to Lindsey, it being averred in the complaint that the brush was charged with bacilli of anthrax, so that, when Lindsey undertook to shave himself and accidentally cut himself slightly with his razor, and then used the brush, he became inoculated with the germs of anthrax, and died from the effects of the disease. The court is of the opinion that the plaintiffs had no privity with the contract containing the alleged warranty, and hence no right of action. There was no survivorship to them under a breach of warranty directly to Lindsey himself. As to the contention that the action was really in tort, and based on the breach of duty by the defendant arising out of an alleged warranty contained in its catalogue, the court says that, if this were so, the right of recovery and the measure of recovery would be fixed by the Mississippi "Wrongful Death Act," as the use of the brush was in that state; and the court thinks that it was necessary, if the action was intended to be under that statute, that the complaint should contain some allegation of knowledge or notice on the part of the defendant that the brush contained anthrax germs, or some sufficient allegation of a negligent act or omission on the part of the defendant which caused the injury to Lindsey.

### Evidence and Rules of Evidence in Fracture Case

*(Dean v. Seeman (S. D.), 176 N. W. R. 649)*

The Supreme Court of South Dakota, in affirming an order denying the defendant a new trial after a judgment had been rendered in favor of the plaintiff for an amount not stated, says that the plaintiff fractured the femur in one of his legs, and, after two months' treatment by the defendant, it was found that the ends of the broken bone were not in proper place, but lapped in such a way that the injury could not heal. It appeared from the undisputed evidence that the fragments of the broken bone were placed in proper apposition by the defendant immediately after the injury. The limb was then placed in splints and bandages. The fracture was obliquely across the bone, but the defendant applied no "extensions" or other means to overcome the tendency of the muscles to contract, other than the use of the splints and bandages. The limb was left in this condition about twenty-four days, when the defendant removed the splints and put it in a plaster cast. He was assisted in this operation by a professional nurse, who testified that when the splints were removed it was apparent that the bones had slipped out of place, and that she directed the defendant's attention to that fact. He denied that he knew, or was told that the bones were out of place at that time, but the jury had the right to believe the nurse, and would have been justified in finding—and probably did find—that the fragments of the bone were out of place and in such a position, when the cast was put on, that a union was improbable. Another significant fact, and one from which the defendant ought to have known that the fragments of bone were not in place, was that the patient's foot did not remain in an upright position, but would gradually lop over, sometimes outward and sometimes in toward the other foot, and frequently had to be straightened up. Moreover, the defendant admitted that, shortly after the cast was applied, he discovered a shortening of the patient's limb, and admitted that he knew that this indicated that the fragments of the bone were slipping by each other, yet the cast was not removed, nor were any steps taken to prevent this slipping, until nearly a month after the cast was put on.

On the question of negligence the jury was instructed that, in order to render a verdict in favor of the plaintiff, it must find that the defendant did not render the services for which he was employed, and did not exercise due and ordinary skill and care, such as is required of physicians. It must also find, if it found that there was an injury, that this was caused by the lack of skill and care (the skill and care rendered by the defendant); there must be a direct connection between the two. Unless it was proved by a preponderance of the evidence that the defendant failed to exercise such reasonable, ordinary and average learning, care and skill, in the treatment of the plaintiff's injury, then the verdict must be for the defendant. These instructions correctly stated the law as applicable to the foregoing facts, and the verdict in favor of the plaintiff was warranted by the evidence.

The mere fact that the broken bone did not stay in place after it had been set and did not grow together in the usual length of time did not necessarily prove, or even imply, that the defendant was negligent or unskilful. Physicians and surgeons are not to be held responsible for results, but only for the kind of service rendered by them.

It was not necessary to plead the failure to use weights in order to admit the testimony of the plaintiff's wife that no weights or extensions were applied. The question as to whether they were used was competent, under the general allegation of negligence, to show the manner in which the defendant treated the plaintiff's injured limb.

The plaintiff had a right to assume and to prove, if he could, that there was but one usual or proper way of treating an injury like his. But this was not conclusive or binding on the defendant. He had the right to rebut this testimony, and to prove, if he could, that some other way was the usual way, or that there was more than one proper way.

During the trial, the court, over the defendant's objection, permitted the plaintiff to exhibit the injured limb to the jury. What the purpose of this exhibition was was not apparent. There was no dispute as to the nature, location or extent of the injury, or as to the extent of the recovery. The supreme court is unable to see how the jury had any more knowledge relative to the issues involved after the inspection than it had before, and the trial court should not have permitted it. On the other hand, the supreme court is unable to see how the defendant was prejudiced by the inspection.

### Larger Award for Injuries Justified Now

*(Standard Oil Co. v. Titus (Ky.), 219 S. W. R. 1077)*

The Court of Appeals of Kentucky, in affirming a judgment for $15,200 damages in favor of plaintiff Titus, a man 35 years of age, whose injuries were such that it was necessary to amputate one of his legs 8 inches below the knee, says that the defendant oil company insisted that the verdict was excessive; but, "since the cost of living has greatly increased and the purchasing power of a dollar is far less than it used to be," the court concludes that the verdict was not excessive.

## Society Proceedings

### COMING MEETINGS

Am. Acad. of Ophthal. and Otolaryng., Kansas City, Mo., Oct. 14-16
American Association of Railway Surgeons, Chicago, Oct. 6-8.
American Child Hygiene Association, St. Louis, Mo., Oct. 11-13.
American Hospital Association, Montreal, Quebec, Oct. 4-8.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Mississippi Valley Medical Association, Chicago, Oct. 26-28.
New England Surgical Society, Providence, R. I., Oct. 6-7.
New Mexico Medical Society, Roswell, Oct. 15-16.
Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 4-7.
Southern Medical Association, Louisville, Ky., Nov. 15-18.
Tri-State District Medical Society, Waterloo, Iowa, Oct. 4-7.
Vermont State Medical Society, Rutland, Oct. 7-8.
Virginia, Medical Society of, Petersburg, Oct. 26-29.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### Archives of Surgery, Chicago

September, 1920, **1**, No. 2

*Distribution of Adenomyomas Containing Uterine Mucosa. T. S. Cullen, Baltimore.—p. 216.
*Studies in Bone Transplantations: Experimental Study of Comparative Success of Autogenous and Homogenous Transplants of Bone in Dogs. B. Brooks and W. A. Hudson, St. Louis.—p. 284.
*Gallbladder Disease. C. Jacobson, Boston.—p. 310.
*Open Pneumothorax: Experimental Study of Functional Pathology of Sucking Chest Wounds. C. H. Lenhart, Cleveland.—p. 336.
*Blood Pressure in Cases of Prostatic Obstruction. V. J. O'Connor, Boston.—p. 359.
*Surgical Experiences with An Intracranial Approach to Chiasmal Lesions. G. J. Heuer, Baltimore.—p. 368.
*Results of Operations for Inguinal Hernia, Performed in Johns Hopkins Hospital. A. S. Taylor, Baltimore.—p. 382.

**Adenomyomas Containing Uterine Mucosa.**—The eighteen cases cited by Cullen show that adenomyomas, consisting of a matrix of nonstriped muscle and fibrous tissue with typical uterine mucosa scattered throughout, are to be found in the uterus, rectovaginal septum, tubes, round ligaments, uteroovarian ligaments, uterosacral ligaments, sigmoid flexure, rectus muscle and umbilicus, and that occasionally large quantities of normal uterine mucosa are found in the ovary. The cases are reported in detail as to clinical history and pathologic findings.

**Bone Transplantation.**—The animal experiments performed by Brooks and Hudson demonstrated that a defect in the shaft of a bone of a dog may be permanently regenerated by a bone transplant removed from another dog. Homogenous transplants of bone were successful in 76.8 per cent. of instances as compared with 84.8 per cent. of successful results in autogenous transplants. The age of the animals is an important factor in determining the proportion of success and failure of autogenous transplants of bone in dogs. The importance of the age of the donor or recipient as a factor in determining the success or failure of the homogenous transplant of bone in a dogs is probably of less important than factors of incompatibility of tissue of different individuals.

**Gallbladder Disease.**—A statistical study of hundreds of cases made by Jacobson shows that gallbladder disease—cholecystitis and cholelithiasis—is a disease of middle age occuring with special frequency in women and closely associated with the increasing incidence of pregnancy. Many cases evidently originate in early age and persist with only vague indefinite symptoms until later in life. Gallstones are due in all probability to a hematogenous infection, commonly streptococcal, of the gallbladder and biliary passages, and are associated with an altered cholesterin content of the blood. Common duct and pancreatic complication are of frequent occurrence in the long persisting cases. There appears to be no special dilatation of the extrahepatic biliary passages in the slow obliteration of the gallbladder through chronic infective processes with fibrosis. Recurrences are due mainly to overlooked or reformed stones, persistence of the original infection or to its extension as a chronic pancreatitis. Injury to the biliary passages during operation is due to the rather frequent abnormalities in the blood vessels and biliary passages. Cholecystectomy is the operation of choice in cholecystitis and cholelithiasis whenever feasible. There is a marked beneficial effect in the long continued drainage of the biliary passages in the complicated cases of cholecystitis and pancreatitis. There is no special detrimental effect of cholecystectomy on the body economy. There is an increasing mortality rate with the increase in the complications of disease. This is an argument for early diagnosis and operation.

**Open Pneumothorax.**—Experimental open pneumothorax in rabbits causes an intense dyspnea, provided the anesthetic is not too deep, and death, if unrelieved by closure of the thoracic opening. The volume of air respired per minute is decreased despite the increased respiratory effort. The rate of oxygen consumption is variable, due probably to variable compensatory musclar action rather than to impaired gaseous exchange between lung and blood. The excretion of carbon dioxid is impaired, often to a great degree. The respiratory quotient is constantly reduced. There is an increase in the total carbon dioxid content of the blood, and at the same time an increase in the hydrogen ion concentration. These functional changes are important in open chest wounds, in the operation for empyema and related surgical conditions. The results of Lenhart's work as applied to the operation for empyema would suggest these advantageous procedures: In early cases the aspiration of the pus through a needle for a few days in order to allow time for stiffening of the mediastinum. The use of local, instead of general, anesthesia. Closer observation of the patients for the first few hours after operation. The incomplete removal of pus at the operating table. The temporary application of a Politzer bag to the drainage tube, by which a "sucking" wound is prevented and into which the pus may drain. The probably unnecessary refinement of the use of negative pressure per se. In any case it will not be long before the formation of adhesions and the plastic exudate will prevent the development of this condition.

**Blood Pressure in Prostatic Obstruction.**—A study of the blood pressure changes in fifty-six patients with urinary retention due to prostatic obstruction, fifty-five of whom were operated on was made by O'Connor. Complete drainage of the bladder in patients suffering from urinary retention was attended by a marked fall in systolic blood pressure during the first forty-eight hours. During this period the renal function was diminished. If satisfactory drainage of the bladder was continued, the blood pressure was gradually maintained at a definite, nonfluctuating level. During this period the adequacy of the renal function and the general condition of the patient indicates that he was in the best possible condition for operation. Patients prepared for operation by waiting until this fixed blood pressure level had been established showed a very insignificant postoperative decrease in blood pressure. The majority of these patients who had suffered from long standing urinary retention and who originally presented themselves with a hypertension, have continued thus far to be relieved of their abnormally high blood pressure, except in a few instances in which demonstrable cardiac disease existed.

**Intracranial Approach to Chiasmal Lesions.**—Heuer's experience is at variance with the views held by other surgeons. He says that from the standpoint of accessibility every chiasmal lesion excepting the portions of hypophysial tumors which have extended far behind the chiasm may be exposed by an intracranial route. Tumors entirely confined to the sella turcica (rare) or portions of tumors within the sella turcica are easily accessible when properly approached and are susceptible of removal. Tumors which have passed beyond the confines of the sella are not only accessible but their size and their operability can be determined. Cysts of the hypophysis are readily accessible, for they, as the solid tumors, appear forward and are as readily susceptible of drainage or removal as by the transsphenoidal approach. Suprasellar lesions are accessible, as are the true chiasmal lesions, tumors which cannot be approached by the nasal route. From the standpoint of accessibility, Heuer says that an intracranial approach best exposes and can most adequately deal with the greatest number of chiasmal lesions; and that the transsphenoidal approach should be considered only in those early cases in which there are sellar headaches but no neighborhood symptoms. The operation employed by him is fully described and well illustrated.

**Results of Operations for Inguinal Hernia.**—The brief historical review made by Taylor goes back twenty-one years, but chiefly his article deals with the cause of recurrence or weakness in the wound following the various procedures made use of in the efforts to cure hernia, and an appraisement of the value to be attached to each of the several features of the operation. The findings are based on 2,486 herniotomies. Only nineteen of these patients died: seven from strangulated hernia; four from pulmonary embolism; four from pneumonia; two from meningitis, and one each from myocarditis

and status lymphaticus. Halsted's operation is performed almost invariably. All details are reviewed and tabulated. One step in the operation is stressed by Taylor—overlapping of the aponeurosis of the external oblique.

## Arkansas Medical Society, Journal, Little Rock

August, 1920, **17**, No. 3

Treatment of Tuberculosis. J. D. Southard, Fort Smith.—p. 64.
Recent Advances in Neurologic Surgery and Especially Diagnosis and Treatment of Brain Injuries. W. Sharpe, New York.—p. 64.
Eye, Ear, Nose and Throat in General Disease. O. Tydings, Chicago. —p. 74.

## California State Journal of Medicine, San Francisco

September, 1920, **18**, No. 9

Prehistoric Trephining of Frontal Sinus. F. A. Burton, San Diego, Calif.—p. 321.
*Eclampsia with Seventy Convulsions; Recovery. A. B. Spalding, San Francisco.—p. 325.
Surgical Treatment of Acute Otitis Media in Children, with Report of Fifty Consecutive Cases. J. A. Bacher, San Francisco.—p. 327.
Hookworm and Amebiasis in California. C. A. Kofoid, Berkeley, Calif.—p. 329.
*Basal Metabolism in Thyroid Disease Aid to Diagnosis and Treatment; Utility of Modified Tissot Apparatus. A. H. Rowe, Oakland, Calif. —p. 332.

**Seventy Convulsions in Case of Eclampsia.**—In a group of seventeen reported cases of eclampsia in which seventy or more convulsions occurred, eight patients died which gives, with the present case report, a total mortality of 44.50 per cent. Considering only eleven cases with less than 100 convulsions, the mortality was only 27 per cent. or the usual expected mortality for the disease. On the other hand, of seven women having more than 100 convulsions, five died, giving a mortality for this group of 71 per cent. Spalding adds one case to this list.

**Basal Metabolism in Thyroid Disease.**—The value of the estimation of basal metabolism as an aid to the intelligent diagnosis and treatment of thyroid disturbances is emphasized by Rowe. The test helps to differentiate the mild hyperthyroid cases from the neurotic and incipient tuberculosis sufferers. It tells the degree of toxicity of an obvious case of hyperthyroidism, be it associated with a hyperplastic or an adenomatous type of thyroid. The metabolic rate determinations must be the guide of all surgeons who would operate most successfully on toxic goiters. As a safeguard to roentgen-ray therapy, it is already a well recognized necessity. Finally, in diagnosing hypothyroidism in its various degrees and especially in gaging the amount and duration of thyroid administration, basal metabolism has gained a place of great value. Much unnecessary, harmful and unwise thyroid feeding will be obviated if clinicians will administer thyroid only when accurate basal rate determinations indicate it. Rowe also calls attention to the desirability of the modified Tissot type of respiration apparatus as an instrument suitable for installation in an office and one which though more time consuming to operate than the portable type of Benedict yields more extensive information and wider possibilities of investigation in respiration study.

## Illinois Medical Journal, Oak Park

September, 1920, **38**, No. 3

*Diphtheria Immunization. A. B. Bosler, Chicago.—p. 185.
Doctors and Public Health. C. W. Lillie, East St. Louis.—p. 190.
Should the Medical Profession Organize or be Bolshevized? Votes, Votes and More Votes. G. F. Lydston, Chicago.—p. 191.
Catharsis Following Abdominal Operations. J. F. Herrick, Ottumwa, Ia.—p. 194.
Roentgen-Ray Manifestations of Diseases of Chest. R. E. L. Gunning, Galesburg.—p. 196.
Diagnosis of Heart Lesions Simplified. J. Weatherson, Chicago.—p. 199.
Cervical or Krönig Cesarean Section. E. L. Cornell, Chicago.—p. 203.
Points in Infant Feeding of Value to General Practitioner. J. R. Gerstley, Chicago.—p. 206.
Analysis of Cases of War Neuroses. L. J. Pollock, Chicago.—p. 208.
Vasotomy Indications; Description of Technic; Postoperative Treatment. R. H. Herbst and A. Thompson, Chicago.—p. 212.
Lithiasis of Urinary Organs. I. S. Koll, Chicago.—p. 218.
*Unilateral Nephritis. G. Kolischer and J. Eisenstaedt, Chicago.—p. 224.
Carrel-Dakin Treatment. W. E. Potter, Oak Park.—p. 225.
Skull Fracture; Two Cases. E. S. Murphy, Dixon.—p. 229.
*Colon Malfusion: Analysis of Cases. R. Hazen, Paris.—p. 231.
Sacral Anesthesia. I. Perrill, Chicago.—p. 236.
Malingerer as Medical and Medicolegal Problem. W. M. Krohn, Chicago.—p. 239.

**Diphtheria Immunization.**—Of the sixty-eight adults tested by Bosler as to the Schick reaction, twenty-six were positive. Of fifty-four children, aged from 3 to 14 years, fifteen were positive. Out of fifty nurses, twenty-three were positive and eighteen of these gave a 2 or 3 plus reaction. The immunizing effects of toxinantitoxin were also studied. The injections were made in the arm and three injections were given at seven day intervals. Among the fifteen children immunized, no severe reactions were observed. Among the twenty-six adults severe reactions were noted in nineteen. The local reactions in adults were for the most part severe and consisted of marked swelling, induration and redness, extending in some instances from the shoulder to the elbow, and in two or three assuming a cyanotic (purple) appearance. The constitutional symptoms were characterized by a temperature of from 100 to 104 F., chills, malaise, prostration and in one instance by delirium. The second and third injections were, on the whole, less marked than the first, but in several instances the reactions were just as severe and in one case more so. It was noted that those giving the more pronounced Schick reaction gave, as a rule, the more pronounced reaction to the toxin-antitoxin. Also those giving the severer reactions to the toxin-antitoxin were more likely to become immune at an earlier date. The only case giving a positive Schick reaction on retest one and a half years after immunization was one giving a slight reaction to the mixture.

**Unilateral Nephritis.**—That one kidney may function absolutely normally, while the other excretes urine showing unmistakable evidences of nephritis or nephrosis is the keynote of this paper by Kolischer and Eisenstaedt. A permanent disorder in one kidney is always a menace to its mate and consequently to the carrier on account of the mobilizing of nephrologic elements from the diseased kidney.

**Colon Malfusion.**—The process by which, in the embryo, the colon becomes agglutinated and fixed in position Hazen speaks of as fusion. Malfusion means a badly fused colon. Hazen claims that these cases are far from being uncommon and that many incorrect diagnoses and operations are performed for chronic appendicitis, ovary trouble, floating kidney, gallbladder disease and ulcer of the duodenum and stomach. After the operation, it is a great embarrassment to the physician to find that his patient has been in no way relieved. These cases, in Hazen's experience, are practically all cases of colon malfusion. The characteristic points in the clinical history, which should serve definitely to distinguish the colon malfusion case from cases of other common abdominal conditions, are: Gradual onset of indefinite abdominal disturbance. Fatigue, usually dating back to early adult age, with physical inefficiency and loss in weight. Pain, dragging in type with more or less steady soreness, which is aggravated by certain postures, and recurrent exacerbations which are definitely induced by exertion or jolting.

## Iowa State Medical Society Journal, Des Moines

Aug. 15, 1920, **10**, No. 8

War Surgery. D. S. Fairchild, Clinton.—p. 257.
Infection of Gallbladder. J. E. Brinkman, Waterloo.—p. 266.
Postoperative Tetany. J. H. McGrady, Independence.—p. 270.
Pernicious Vomiting with Plea for Mother. P. E. Gardner, New Hampton.—p. 273.
Student Health Department of University of Iowa. C. R. Thomas, Iowa City.—p. 275.

## Journal of Bacteriology, Baltimore

July, 1920, **5**, No. 4

Growth Cycle of Azotobacter. D. H. Jones, Guelph, Canada.—p. 325.
*Diagnosis of Anthrax from Putrefying Animal Tissues. W. H. Hagan, Ithaca, N. Y.—p. 343.
Bacterial Decomposition of Salmon. A. C. Hunter, Washington, D. C. —p. 353.
*Fusiform Bacilli of Vincent's Angina. S. R. Gifford, Omaha, Neb.—p. 365.
Highly Resistant Thermophilic Organism. P. J. Donk, Washington, D. C.—p. 373.
Biology of Clostridium Welchi. J. R. Esty, Providence, R. I.—p. 375.
Use of Agar Slants in Detecting Fermentation. H. J. Conn and G. J. Hucker, Geneva, New York.—p. 433.

**Diagnosis of Anthrax.**—The chief difficulty in the way of a cultural diagnosis of anthrax, the difficulty in distinguishing rapidly between the true anthrax and the anthrax-like organisms Hagan claims is obviated by a method which consists in examining directly with a high power objective the minute structure of the suspected colony. The method gives at once the morphology of the organism, whether or not it is motile, whether or not spores are present, their location and shape if present, and the relation of the organisms to each other in the colony. Hagan does not advocate the method as one to supersede entirely the use of guinea-pigs in the diagnosis of anthrax from more or less decomposed animal material, but he believes it is a valuable aid in making a rapid diagnosis and will eliminate the guinea-pig in the majority of cases.

**Fusiform Bacilli in Vincent's Angina.**—Bacilli were found to be more numerous than spirilla in seventeen out of twenty-four examinations. The fusiform bacilli of Vincent's angina show much greater variation in their gram-staining properties than ordinary organisms. A slight predominance of gram-positive organisms was noted, but not great enough to justify any conclusions. The method of staining is not responsible for the variation noted. No spirilla were found in cultures. An organism greatly resembling the fusiform bacilli of Vincent's angina was found as the predominant organism in the postmortem on a case of bronchopneumonia. It was grown to the seventh generation but not isolated.

## Journal of Biological Chemistry, Baltimore

August, 1920, **43**, No. 1

*Presence of Iodin in Large Quantities of Sheep Pituitary Gland. E. C. Seaman, New York.—p. 1.
*Hemato-Respiratory Functions. III. Fallacy of Asphyxial Acidosis. H. W. Haggard and Y. Henderson, New Haven, Conn.—p. 3.
*Hemato-Respiratory Functions. IV. How Oxygen Deficiency Lowers Blood Alkali. H. W. Haggard and Y. Henderson, New Haven, Conn.—p. 15.
*Hemato-Respiratory Functions. V. Relation of Oxygen Tension and Blood Alkali in Acclimatization to Altitude. Y. Henderson, New Haven, Conn.—p. 29.
*Method for Determination of Calcium in Small Quantities of Blood Serum. B. Kramer and H. Howland, Baltimore.—p. 35.
*Determination of Minute Amounts of Acetone by Titration. R. S. Hubbard, Clifton Springs, N. Y.—p. 43.
*Determination of Acetone in Expired Air. R. S. Hubbard, Clifton Springs, N. Y.—p. 57.
Biochemical Changes in Flesh of Beef Animals During Underfeeding. C. R. Moulton, Columbia, Mo.—p. 67.
Amino-Acid Synthesis in Animal Organism. Can Nor-Leucine Replace Lysine for Nutritive Requirements of White Rat? H. B. Lewis and L. E. Root, Urbana, Ill.—p. 79.
*Effect of Hypodermic and Oral Administration of Calcium Salts on Calcium Content of Rabbit Blood. G. W. Clark, Berkeley, Calif.—p. 89.
Toxic Action of Ingested Linseed Meal on Trout. L. H. Almy and R. K. Robinson, Washington, D. C.—p. 97.
*Antiscorbutic Value of Honey. H. K. Faber, San Francisco.—p. 113.
Synthesis of Phytic Acid. R. J. Anderson, Geneva, N. Y.—p. 117.
*Experiments on Carbohydrate Metabolism and Diabetes. II. Renal Threshold for Sugar and Some Factors Modifying It. F. M. Allen and M. B. Wishart, New York.—p. 129.
Determination of Iodin in Connection with Studies in Thyroid Activity. E. C. Kendall, Rochester, Minn.—p. 149.
Determination of Iodin in Blood and in Animal Tissues. E. C. Kendall and F. S. Richardson, Rochester, Minn.—p. 161.
Formation of Gum, Levan, by Mold Spores. N. Kopeloff, L. Kopeloff and C. J. Welcome, New Orleans.—p. 171.
Chemistry of Phosphomolybdic Acids, Phosphotungstic Acids, and Allied Substances. H. Wu, Boston.—p. 189.
Reaction of Milk in Relation to Presence of Blood Cells and of Specific Bacterial Infections of Udder. J. C. Baker and R. S. Breed, Geneva, N. Y.—p. 221.
Relation of Urochrome to Protein of Diet. K. F. Pelkan, Berkeley, Calif.—p. 237.
Conjugated Nuclei Acid of Pancreas. E. Hammarsten, Stockholm.—p. 243.
*Water-Soluble Vitamins. I. Are Antineuritic and Growth-Promoting Water-Soluble B Vitamins the Same? A. D. Emmett and G. O. Luros, Detroit.—p. 265.
Water-Soluble Vitamins. II. Relation of Antineuritic and Water-Soluble B Vitamins to Yeast Growth-Promoting Stimulus. A. D. Emmett and M. Stockholm, Detroit.—p. 287.
*Studies in Vitamin Content. W. H. Eddy and H. C. Stevenson, New York.—p. 295.

**Iodin in Pituitary.**—Fresh sheep pituitary glands were trimmed, ground, dried, and powdered by Seaman. The presence of iodin was determined by the Baumann-Riggs method. Three samples were examined, the first consisting approximately of 30 gm.; the second 50 gm., and the third 100 gm. In none of these samples was any iodin detected. These findings corroborate the findings of Denis.

**Hematorespiratory Functions: Asphyxial Acidosis.**—The prevailing conception of asphyxial acidosis according to Haggard and Henderson, is in many respects diametrically opposed to the facts. Under low oxygen overbreathing occurs before the blood alkali is appreciably reduced. Intravenous injections of lactic acid do not induce an acidosis at all commensurable with the amount administered. It is improbable that such a condition as "lactic acid acidosis" ever occurs in life. An increase of lactates in the blood or urine is probably an indication, not of acidosis, but of low ratio of carbonic acid sodium bicarbonate, that is, alkalosis.

**Oxygen Deficiency and Blood Alkali.**—Haggard and Henderson state that the process through which oxygen deficiency lowers the blood alkali is as follows: overbreathing blows off an excess of carbon dioxid (acapnia), leaving the carbon dioxid ratio, i. e., the relation of carbonic acid to sodium bicarbonate, and therefore presumably the $C_H$ in the blood, below normal. This alkalosis is then compensated by a disappearance of alkali from the blood. On restoration to normal oxygen tension the reverse process occurs: the breathing is relatively depressed, the carbon dioxid ratio carbonic acid sodium bicarbonate and the $C_H$ of the blood are raised above normal, and this acidosis recalls alkali to the blood.

**Oxygen Tension, Blood Alkali and Altitude.**—The barometric pressure to which one becomes acclimatized, through the tension of oxygen, Henderson states is the fundamental factor controlling the volume of air breathed per unit mass of carbon dioxid eliminated, the alveolar carbon dioxid tension, and the amount of alkali called into use in the blood. The law of these relations is formulated by Henderson and its bearing on the unknown anoxemic respiratory stimulant and hyperoxemic respiratory depressant is indicated.

**Determination of Blood Calcium.**—A method is described by Kramer and Howland whereby the calcium in 2 c.c. of serum may be determined with a maximum error of 3 per cent. In individual determinations of a series the error may often be less than 1 per cent.

**Determination of Acetone in Dilute Solutions.**—A method is described by Hubbard by which the Messinger titration method may be applied to dilute acetone solutions, certain reactions of acetone were studied, and a method is proposed by which small amounts of acetone can be separated from much larger amounts of alcohol and other interfering compounds.

**Determination of Acetone in Expired Air.**—A method is described by Hubbard by which acetone can be determined in the expired air by iodin titration or by precipitation with Scott-Wilson's reagent after removal of such interfering compounds as primary alcohols, aldehydes, phenols, and the simple cyclic hydrocarbons. Close agreement of results obtained by these chemically different methods of determination on the breath of normal subjects indicates strongly that the compound so determined is acetone. A series of results obtained by the method on normal subjects and on a few pathologic cases is included.

**Effect of Calcium Salts on Blood Calcium.**—While the intravenous or subcutaneous injections of calcium salts may cause a transitory increase in the calcium content of rabbit blood, Clark says that feeding a calcium-rich diet has no effect on the calcium content.

**Antiscorbutic Value of Honey.**—In nine out of a series of ten guinea-pigs fed by Faber on a diet of oats, water, and honey, severe scurvy developed in from four to six weeks. Hence, it is probable that no antiscorbutic vitamin is present in honey.

**Carbohydrate Metabolism and Diabetes.**—A diminished renal permeability for glucose, in the sense of a raised threshold according to tests with Benedict's copper solution, is definitely proved as the rule in diabetic animals. Various possible causes for the elevation of the threshold are discussed by Allen and Wishart. The prolonged excess of sugar in the blood may be an important factor, but some considera-

tions seem to oppose it. Certain observations suggest that high fat diets may raise the sugar threshold in diabetes even without acidosis. The renal function may be affected by various extraneous causes, of which the elevation of the threshold by epinephrin is one interesting example. No interrelation of the renal and pancreatic functions is demonstrable in the sense of an increased readiness of sugar excretion even in totally depancreatized animals. An elevation of the threshold seems to be connected particularly with severity of the diabetes, but a teleological interpretation of this as a protective mechanism for saving to the body is considered improbable.

**Water-Soluble Vitamins.**—Emmett and Luros found that the antineuritic vitamin (pigeons) in unmilled rice is stable to heat at 120 C. and 15 pounds pressure for one hour. It is partially altered by heating in the air oven at 120 C. for two hours, and totally destroyed at 120 C. and 15 pounds pressure in two and six hours. The vitamin in extracts is more easily altered by heat. The water-soluble B vitamin (rats) in unmilled rice appears to be stable to heat at these same temperatures, that is, it is not distinctly or totally broken down. Whether this vitamin was slightly destroyed could not be definitely ascertained due to the lack of quantitative methods. These findings suggest tentatively, at least, that the antineuritic (pigeons) and the water-soluble B (rats) vitamins are not the same, and that it would be better to consider them as being different until further proof to the contrary has been adduced.

**Vitamin Content Measurement.**—Eddy and Stevenson present experiments conducted with both the Bachmann and Williams technic for vitamin measurement and present a new technic which seems to eliminate some of the difficulties in manipulation of these two tests. Evidence is presented in regard to the specificity of the test that seems to confirm the view that the cause is the B vitamin and that the presence of the C vitamin does not in any way affect the test. Two applications of the test are given as illustrative of its field of application.

## Maine Medical Association Journal, Portland

July, 1920, **10**, No. 12

Defects in the Draft in Maine. C. B. Sylvester, Portland.—p. 351.
Mental Condition of Prisoners. H. M. Swift, Portland.—p. 362.

## Medical Record, New York

Sept. 11, 1920, **98**, No. 11

Mammalogy: An Anatomic and Taxonomic Consideration of Group to Which Man Belongs. R. W. Shufeldt, Washington, D. C.—p. 421.
Therapy of Hyperthyroidism. M. F. Morris, Jr., Atlanta, Ga.—p. 431.
Fundamental Principles Underlying Intestinal and Rectal Surgery. J. M. Lynch, New York.—p. 432.
Lethargic Encephalitis. W. A. Campbell, Colorado Springs, Colo.—p. 434.
*Accurate and Simple Method of Testing Coagulation Time of Blood. G. R. Love, Chicago.—p. 436.
Spontaneous Closure of Large Vesico-Uterine Fistula. G. L. Brodhead, New York.—p. 437.
Supernumerary Breasts in Axillae. G. B. Lake, Columbus Barracks, Ohio.—p. 438.

**Testing Coagulation Time of Blood.**—The coagulation time is determined by Love within twenty seconds. The end-point is definite and is entirely independent of the judgment of the operator. The method described employs capillary tubes and resembles in principle McGowan's capillary tube method. The blood is procured from the median basilic. The first few drops of blood are discarded and then 1 or 2 c.c. are collected in a paraffined test tube. The capillary tubes are filled by dipping the drawn out ends into the blood and sucking it up rapidly to the shoulders of the tubes. The time is recorded when the blood first enters the capillary tubes. Two or three tubes are filled and the time noted when the blood enters each tube. The tubes are now laid flat on a stand alongside a thermometer. At two minutes before coagulation should occur normally, about 2 cm. of the first tube are broken off and the separated part is held before transmitted light and broken between the fingers in such manner that the proximate ends may be drawn apart parallel to each other without injuring the thread of fibrin. This process is repeated at intervals according to the accuracy desired until the end-point is reached. The end-point comes when a thread of fibrin will stretch seven to ten millimeters across the break. The second and third tubes are not used if the end-point is reached in the first tube, except as a general check on the final end-point. The time that the blood remains in the paraffined test tube before drawing it up into the capillaries must not exceed two minutes. Repeated experiments have been made which show that if the blood flows from the needle into the test tube in a stream, there will be no changes in the blood for two minutes which will affect the coagulation in the capillary tubes.

## Military Surgeon, Washington, D. C.

August, 1920, **67**, No. 2

Delousing American Army in France. H. L. Gilchrist.—p. 129.
Training Down. R. M. Culler.—p. 149.
Medical Activities in Zone of Armies. A. N. Stark.—p. 154.
*Early Use of Convalescent Serum in Influenza. F. D. Francis, M. W. Hall and A. R. Gaines.—p. 177.
History of Overseas Division, Surgeon-General's Office During War Period. S. J. Morris.—p. 180.
Future of Psychiatry in Army. T. W. Salmon.—p. 200.
Factors Making for Low Venereal Record in Army. P. M. Ashburn.—p. 208.
Measles and Measles-Pneumonia. J. R. Gerstly.—p. 214.
*Case of Multiple Echinococcus Cyst. H. W. Jones.—p. 219.
Emergency Measure and Foresight in Malaria Control. L. D. Fricks, U. S. P. H. Service.—p. 224.
Ocular Symptoms of Lethargic Encephalitis. E. B. Spaeth.—p. 230.
American Red Cross Assistance to Army Medical Department in the United States. H. C. Connor.—p. 232.

**Use of Convalescent Serum in Influenza.**—During the epidemic of influenza in January and February, 1920, at Fort Sam Houston, Texas, a trial was made of the use of convalescent serum in the treatment of influenza. Twenty-six patients received the serum. The serum was given in addition to the routine treatment administered to all the patients in the hospital at the time. It consisted of one or more injections of from 50 to 100 c.c. given intramuscularly. The first injection was given as promptly after admission as was possible. Other injections followed at intervals of twenty-four hours if the course seemed to demand it. Intravenous injection was not practised in order to avoid the complications incident to the possibility of using incompatible types of blood. In fifteen cases only one injection was given as all acute symptoms promptly subsided. Ten patients received a second injection, and one patient received three injections in four days, this being the only patient in the series to develop pneumonia after treatment had been instituted. The course of the pneumonia was very mild, the temperature dropping to normal on the fifth day. In no case was there any reaction or untoward effect from the use of the serum. The general impression was that the men who received the serum had an easier time.

**Multiple Echinococcus Cysts.**—In addition to a large cyst of the liver Jones' patient also had a very large cyst of the spleen, multiple cysts of the liver, an empyema of the right pleural cavity from a rupture of one of the abscessed cysts through the diaphragm and the common duct was filled with detritus from a cyst.

## Missouri State Medical Association Journal, Chicago

September, 1920, **17**, No. 9

*Full Term Extra-Uterine Pregnancy. Q. U. Newell, St. Louis.—p. 357.
*Malignant Tumors in Childhood. M. B. Clopton, St. Louis.—p. 361.
Conclusions in Juvenile Deforming Osteochondritis (Perthes' Disease). C. B. Francisco, Kansas City, Mo.—p. 366.
*Operative and Nonoperative Treatment of Tuberculosis of Spine. C. A. Stone, St. Louis.—p. 367.
Tuberculosis of Hip. J. E. Stewart, St. Louis.—p. 368.
Examination of Infant. F. C. Neff, Kansas City, Mo.—p. 373.
Relation of Proctologist to Group Diagnosis. W. H. Stauffer, St. Louis.—p. 376.
Obstruction of Colon; Report of Cases. O. A. Ambrose, St. Louis.—p. 377.

**Full Term Extra-Uterine Pregnancy.**—Three cases of full term extra-uterine pregnancy have been seen by Newell. In two cases living fetuses were delivered and in one case a fetus dead for some time previous to operation was obtained.

All the mothers survived the experience in good shape. The literature is reviewed.

**Malignant Kidney Tumors in Children.**—Cases of malignant tumors of the kidney, eye, brain, spine, testicle, vagina, ovary, intestine and bone are reported by Clopton. He says that early operation offers the best chances, but he is more convinced than ever that Coley's toxin should be used in these cases with great thoroughness. He cannot agree that all giant cell growths need the toxins because these are benign and should be eradicated, if possible, but in all other growths, whether operative or not, the patient should get the injections and have the benefit of the roentgen ray in massive doses, or be treated with radium.

**Treatment of Tuberculosis of Spine.**—The total number of cases reviewed by Stone is sixty-five. Thirty-three patients were operated on in one way or another while the remaining thirty-two received what is termed conservative treatment. On the basis of findings ankylosing operations for tuberculous spine in children are not recommended by Stone. About 19 per cent. of cases of Pott's disease treated in the usual way developed abscesses. Fourteen, or over 42 per cent., of thirty-three operative cases, had abscesses. Operation has not prevented increase in deformity, and after care must be carried out during as long a time following operation as if nothing had been done. The mortality of operative cases was 15 per cent.

## New Orleans Medical and Surgical Journal

September, 1920, **73,** No. 3

Uterine Fibroids Complicating Pregnancy. A. P. Heineck, Chicago.—p. 85.
Case of Goundou (Anakhre) Observed in Bahia, Brazil. F. Luz and O. Torres, Bahia, Brazil.—p. 100.
*Dressing for Fracture of Clavicle. E. L. Leckert, New Orleans.—p. 104.

**Dressing for Fractured Clavicle.**—To avoid the irritation caused by zinc oxid plaster in the South, Leckert uses ordinary cloth. A piece long enough to make a posterior figure of eight about the shoulders, and from four to five inches wide is padded with cotton in each part that is to encircle the axillae. The affected side is padded heavier, and if pressure is desired over the site of fracture, that part fitting over the clavicle, likewise. The cloth is folded to two or two and a half inches, and sewed sausage-like. This is applied as a posterior figure of eight bandage, and after drawing the shoulders fully back which in most fractures reduces the deformity, the ends are firmly sewed together. This dressing acts as a reduction and retentive bandage and an axillary pad. A second piece of cloth is padded on one end for several inches, and likewise folded and sewed. The arm is well drawn back and the free end is sewed to the lower opposite part of the figure of eight. Some elevation of the shoulder is thus obtained and complete immobilization of the arm. A sling may be used.

## Northwest Medicine, Seattle

August, 1920, **19,** No. 8

Quarter Century's Progress in Medicine. B. L. Steeves, Salem.—p. 193.
*Operation for Lumbago and Sciatic Rheumatism. N. A. Johanson, Seattle.—p. 195.
Diseases of Ethmoid and Sphenoid Sinuses. J. H. Harter, Seattle.—p. 199.
Plastic and Cosmetic Surgery of Face. A. G. Bettman, Portland, Ore.—p. 205.
Cinematic Amputations. E. W. Rockey, Portland, Ore.—p. 209.
Case of Atrophied Placenta in a Twin Pregnancy. J. M. Taylor, Boise, Idaho.—p. 211.

**Spinal Bone Graft Operation for Lumbago.**—Faulty development of the lower lumbar vertebrae and the upper sacral segments is of very frequent occurrence, and most patients complaining of aches or pain of the spine locate the trouble in the small of the back. Johanson states that only those cases in which a definite deformity of the fifth lumbar vertebra, due to congenital defect or changes incident to chronic osteoarthritis should be considered surgical. An apparently normally developed fifth lumbar may be found but well marked osteitis and osteoarthritis are present. In these cases a diligent search should be made for focal infection and such focal infection, if found, must be removed. Johanson has operated in six cases by the method used for tuberculosis of the spine, by inserting a bone graft from the tibia, the graft extending from the third to the first vertebra. The patient is kept in bed for six weeks; a plaster of Paris cast is made after the operation to fit the back of the patient, extending from below the shoulder-blades to the end of the sacrum, covering the back only. This cast is then taken off and allowed to harden and applied later under the patient in bed. The bed should have a fracture-board and a Bradford frame. The patient is kept on his back with the cast under him for three weeks; then the cast is removed and the patient is allowed to turn on his sides. Only one pillow should be allowed the patient. All the patients operated made excellent recoveries, except one in which infection occurred and the graft was lost.

## Pennsylvania Medical Journal, Harrisburg

August, 1920, **23,** No. 11

Significance of Arrhythmia in Infections of Childhood, with Special Reference to Diphtheria. C. B. Farr, Philadelphia.—p. 633.
*Diphtheria from Public Health Standpoint. H. L. Hull, Harrisburg.—p. 638.
Sexual Psychoneuroses as Studied in a Medical Dispensary. E. J. G. Beardsley, Philadelphia.—p. 645.
Corneal Disease of Tubercular Origin. Treatment by Tuberculin. E. B. Miller, Philadelphia.—p. 651.
Three Cases of Partial Ligation of Common Carotid Artery and Resection of Orbital Veins in Pulsating Exophthalmus; Cases of Orbital Tumor with Operation. W. C. Posey, Philadelphia.—p. 658.
Cycloplegic Refraction. F. C. Stahlman, Charleroi.—p. 662.
*Trichinosis Occurring in a Family Group. W. W. Maclachlan, Pittsburgh.—p. 665.

**Lowering Diphtheria Mortality.**—The vital statistics concerning diphtheria analyzed by Hull show that we have reached practically a dead level. Among the registration states Pennsylvania has next to the highest mortality rate per 100,000 population. In combating this situation the following suggestions are made: Early and correct diagnosis with the rational use of laboratory methods, which includes the application of the Schick test more extensively and the immunization of the susceptibles with the toxin-antitoxin mixture. Prompt reporting and isolation of suspects. The use of antitoxin treatment to immunize those exposed. Study of the problem of diphtheria carriers and their isolation until safe to release. The introduction of proper instructions to school teachers and pupils in the prevention of communicable diseases.

**Familial Trichinosis.**—Maclachlan cites the histories of two brothers, a brother-in-law and his son who presented marked eosinophilia and *Trichina spiralis* in the muscle tissue examined. The wives of both men and a son of one of them showed an eosinophilia of 8, 27 and 37 per cent., respectively. As they were all apparently well, and as according to their own statements they had never been sick, the removal of muscle was not possible. These ten people were well until very shortly after they had eaten pork, which later was proved to be infected by *Trichina spiralis.*

## Southwestern Medicine, El Paso, Texas

August, 1920, **4,** No. 8

Some Features of Influenza. W. G. Hope. Albuquerque, N. M.—p. 1.
Fluoroscopy Versus Physical Diagnostic Methods of Chest Examination in Army Work. D. C. Twichell, Albuquerque, N. M.—p. 3.
Perforation in Gastric and Duodenal Ulcer. F. H. Crail, Las Vegas, N. M.—p. 5.

## Tennessee State Medical Ass'n Journal, Nashville

August, 1920, **13,** No. 4

Ocular Manifestations of General Diseases. E. C. Ellett, Memphis.—p. 121.
Etiology of Diabetes Mellitus. W. K. Vance, Bristol.—p. 127.
Empyema. Lucius E. Burch, Nashville.—p. 134.
Diagnosis of Kidney Lesions. C. F. McCuskey, Dyersburg.—p. 136.
Carrel-Dakin Treatment of Infections. H. E. Happel, St. Louis.—p. 139.
Laryngo-Tracheo-Bronchoscopy. A. E. Goodloe, Chattanooga.—p. 141.
Cancer of Stomach. R. L. Sanders; J. J. McCaughan, Memphis.—p. 147.
Venereal Disease Control; Methods, Obstacles and Results. G. A. Hays, Nashville.—p. 152.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Experimental Pathology, London

August, 1920, **1**, No. 4

Oxygen Consumption of Normal and Cancerous Mouse Tissues in Vitro. B. R. G. Russell and W. E. Gye.—p. 175.
*Glandular Adipose Tissue; Relation to Other Endocrine Organs and to Vitamin Problem. W. Cramer.—p. 184.
*Mycelial and Other Micro-Organisms Associated with Human Actinomycosis. L. Colebrook.—p. 197.
Variation in Agglutinability of Bacteria Associated with Variation of Cultural Characters. T. J. Mackie.—p. 213.

**Glandular Adipose Tissue.**—In all types of mammals which have been investigated Cramer says there exists a glandular type of adipose tissue. It has been described under various names, e. g., "primitive fat organ," "fat gland," "hibernating gland," "brown fat," "interscapular gland." In all species it has in the embryo a characteristic glandlike structure. In some species (white rat, tame mouse, hibernating animals) it retains this characteristic histologic structure. But in most species the tissue acquires the appearance of ordinary adipose tissue soon after birth, so that the process has been looked on as one of the stages leading to the formation of the adipose tissue of the adult organism. It is shown that this tissue, which is very vascular, is functionally distinct from ordinary adipose tissue. The fatty material which it contains is rich in cholesterin compounds and other lipoids in addition to ordinary true fat. This load of lipoid is retained under conditions which bring about the disappearance of the ordinary adipose tissue. Evidence is given to show that it is functionally related to the thyroid and suprarenal glands. A particularly close relationship exists between the lipoids of this tissue and those of the suprarenal cortex. The significance of the changes of the lipoids in the suprarenal cortex is discussed. The interdependence of the cortex and medulla of the suprarenal gland for the normal functioning is again emphasized. If vitamins are completely withheld from the diet the lipoids disappear from the suprarenal cortex and from this tissue, which persists, however, as a tissue and exhibits the appearance of a very vascular endocrine organ. The existence of this tissue throws fresh light on the problem of deficiency diseases, since disturbance of the functional activity of this glandlike tissue will have to be considered as a factor in the etiology of these diseases. In view of its appearance, its function and its importance, Cramer proposes to call this glandular type of adipose tissue the "lipoid gland" or "cholesterin gland."

**Mycelial Organisms in Actinomycosis.**—Cultures of mycelial organisms were obtained by Colebrook from the granules of twenty-four cases of human actinomycosis. Twenty-one of the twenty-four strains conformed in their general characters to the anaerobic type (*Actinomyces bovis*); two strains were also anaerobic organisms but with slightly different cultural characters; and one was a quite different, aerobic type. All strains of *Actinomyces bovis* which were tested showed coarse agglutination with the serum of heavily infected patients. The serum of rabbits inoculated with the organism also gave a strong agglutination reaction. The current hypothesis that actinomycosis is directly conveyed to man from vegetable sources or from soil is held to be probably false. Certain evidence is put forward which suggests that the organism is a common inhabitant of the human alimentary tract. Attention is called to the fact that, in addition to the mycelial feltwork always found in acinomycotic granules, there are frequently immense numbers of minute gram-negative coccobacilli. In 80 per cent. of the cases these organisms have been found at some period of the disease; and in about a dozen instances they have been cultivated on artificial mediums. They are of unfamiliar type, and have not, so far as is known, been met with in any other circumstances. It was proposed by Klinger, who reported the cultivation of similar organisms from four cases of actinomycosis in 1912, to apply to them the name *B. actinomycetum comitans*. This name is employed by Colebrook. The association of *B. actinomycetum comitans* with actinomyces in the granules is discussed but no satisfactory explanation has been arrived at. The findings are somewhat suggestive of a genetic relationship between the bacillary organism and actinomyces, analogous to that which Dunbar claimed to have demonstrated in the case of cholera-like vibrios and algae.

### British Medical Journal, London

Sept. 4, 1920, **1**, No. 3114

Educational Number.

### Japan Medical World, Tokyo

July 31, 1920, **10**, No. 31

Experimental Treatment of Tuberculosis with Taulin and Metallic Compound Taulin. S. Takeoka.
Apparatus for Filtering Water Containing Encysted Larvae of Clonorchis Sinensis in Special Reference to Public Health. S. Muto. To be cont'd.

Aug. 7, 1920, **10**, No. 32

Apparatus for Filtering Water Containing Encysted Larvae of Clonorchis Sinensis in Special Reference to Public Health. S. Muto.
Separtive Culture Medium for Cholera Vibrio. B. Koguchi.
Malpighian Glomerules. T. Suzuki.

Aug. 14, 1920, **10**, No. 33

*Standing Albuminuria. H. Saito.
*Quantity of Milk Taken by Baby in Natural Feeding. A. Uchino.
Distribution of B. Dysenteriae in Intestines of Fatal Cases of Infantile Dysentery. M. Minoda.
Abnormal Substances in Urine, Especially So-called Indican in Gynecology and Tocology. M. Dohi.

**Standing Albuminuria.**—By standing albuminuria Saito means albuminuria occurring in a person who was forced to stand. The author observed this condition in ten cases, which are briefly dealt with in the paper.

**Quantity of Milk Nursed by Infants.**—The quantity of the mother's milk nursed by the baby was determined by Uchino by weighing the baby after each nursing. The total amount of the milk sucked by babies on the first day ranged between 29 and 156 gm., the average being 71 gm., or 12 gm. at each nursing. On the seventh day, the total weights were from 224 to 600 gm. or 413 gm. per day and 59 gm. per nursing. The quantity of the milk nursed by each baby is proportional to the weight of the baby.

Aug. 21, 1920, **10**, No. 34

Abnormal Substances in Urine, Especially So-called Indicanuria in Gynecology and Tocology. M. Dohi.
*Effect of Prophylactic Vaccination Against Influenza at Hidachi Mines. Y. Kanazawa.
Case of Lethargic Encephalitis. S. Nukada.

**Use of Vaccine in Influenza.**—The vaccine used by Kanazawa was a pure influenza bacillus vaccine. There were 1,005 cases and fifty-four deaths from influenza during the entire course of the outbreak; in other words, 3.75 per cent. morbidity and 5.4 per cent. mortality. Among those who received only one inoculation the morbidity and mortality were less while among those who received two inoculations, the morbidity was one seventh of the corresponding figures obtained with the nonvaccinated, while the mortality was one third of the nonvaccinated. There were 783 cases of influenza among the nonvaccinated, while there were 115 and 107 cases among the vaccinated receiving the initial and the second injections, respectively. Of these 122, eleven, and eight, respectively, had a complicating pneumonia. The mortality was only one third. From these results it is concluded that the influenza vaccine prepared with the pure culture of *B. influenzae*, as supplied by the Kitasato Institute for Infectious Diseases, has a remarkable prophylactive efficacy, because, it has no by-effects among the vaccinated population, morbidity is greatly diminished, also living complications are greatly diminished in number and consequently there is a smaller percentage of mortality.

### Archives de Médecine des Enfants, Paris

August, 1920, **23**, No. 8

*Demarcation of Feces in Infants. E. Lesné and others.—p. 449.
Infant Mortality in Bavaria During the War. J. Peyrot.—p. 457.
Natality and Infant Mortality. Nobécourt and Schreiber.—p. 474. Conc'n.
Perforation of the Stomach in Month-Old Infant. Phélip and Fey.—p. 490.
Dilatation of the Colon. J. Comby.—p. 493.

**Demarcation of Feces in Infants.**—About 0.2 gm. of carmin in 20 c.c. of water were added to the infant's bottle and the diapers were watched for the stain. In thirty-five infants under 3 months old it appeared in eight hours and thirty minutes; in twenty-two of 3 to 6 months, in eight hours and forty minutes; in fifteen of 6 to 12 months, in nine hours, and in twelve between 1 and 2 years old, in ten hours. The passage was more expeditious and more regular in the breast fed. The results of tests of the reducing power did not correspond to the duration of the passage.

## Bulletins de la Société Médicale des Hôpitaux, Paris

July 9, 1920, **44**, No. 25

Basophil Bodies in Erythrocytes from a Case of Jaundice with Splenomegaly. M. Renaud.—p. 982.
Symptoms in Case of Brown-Séquard Syndrome. Guillain and Lechelle.—p. 983.
Simple Technic for Transfusion. Fiessinger and Janet.—p. 986.
*Typhobacillosis. G. Caussade and E. Doumer.—p. 987.
Another Case of Spirochetal Jaundice at Paris. Villaret and others.—p. 993.
Sequels of Epidemic Encephalitis. Bourges and others.—p. 995.
Twelfth Case on Record of Spontaneous Rupture of Abdominal Aorta. Goéré and Marcandier.—p. 998.
*Chronic Cholecystitis. J. Minet.—p. 1002.
*Onset of General Paresis. C. Mirallié.—p. 1004.
*Three Cases of Epidemic Encephalitis in One Family. P. P. Lévy.—p. 1007.
*Phonendoscopy of Friction Sounds. E. May.—p. 1011.

**Tuberculous Typhobacillosis.**—Caussade and Doumer describe a case of the Landouzy type of tuberculosis, that is, with a pronounced contrast between the severe general symptoms of the infection and the insignificant local lesion. The tuberculosis septicemia had followed close on a nodular and vesicular eruption. The lesion in this case was merely a focus of congestion in the lung which retrogressed completely, like a pneumococcus process, and the whole storm seemed to blow over in about nine weeks.

**Medical Treatment of Chronic Cholecystitis.**—In Minet's case the woman of 33 had long had disturbances from gallstones, with recurring jaundice and fever so severe that she was clamoring for an operation, when he began to treat her with hexamethylenamin. He gave it by the vein in a series of five daily doses of from 0.5 to 1 gm.; in a second series from 1.25 to 1.75 gm. and in a third series up to 2 gm. The total was thus 21.25 gm. in fifteen days, given in a 0.25 gm. per cubic centimeter solution in distilled water. The clinical cure was then complete, both subjective and objective symptoms having subsided.

**Onset of General Paresis.**—Mirallié reports that a woman of 36 had been presenting symptoms suggesting tabes for three years, when suddenly paretic dementia developed, fatal in less than four months. A similar sequence was noted in ten other cases, but certain other slight symptoms in these suggested general paresis from the first.

**Contagiousness of Epidemic Encephalitis.**—The three children in the family described by Lévy developed epidemic encephalitis with intervals of two and four months. The girl of 13 died.

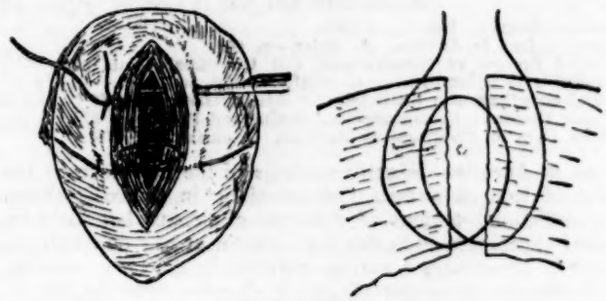
**Phonendoscopy of Friction Sounds.**—May refers to the extent of the area of skin from which friction sounds can be heard by auscultation in the same way as the spleen can be outlined by phonendoscopy. In his study of 300 normal and pathologic subjects he found that a very large increase in the area accompanied sclerosis of the lung, usually associated with emphysema.

## Gynécologie et Obstétrique, Paris

1920, **1**, No. 4

*Conservative Cesarean Section. J. Vanverts and H. Paucot.—p. 320.
*Subcutaneous Symphyseotomy in Argentina. H. Zarate.—p. 331.
Spontaneous Peritonization in Case of Uterine Cancer. A. Kotzareff.—p. 346.
*Bladder and Ureters in Gynecologic Disease. J. Mock and J. Doré.—p. 357.
*The Ureter Danger with Gynecologic Operations. C. Stajano.—p. 369.

**Double Circle Suture for Cesarean Section.**—Vanverts and Paucot have adopted for cesarean section Lambotte's concentric circle suture, and have found that it holds the lips of the incision absolutely perfectly and ensures hemostasis. The curved needle is passed into the incised uterus wall and draws the suture from close to the peritoneum down to close to the mucosa. This is repeated in the other lip of the incision. The long ends in the depths are thus crossed and brought up through all the tissues, thus forming a slightly excentric circle around the first circle. Peritonization of the sutured incision is such an effective barrier against infection from the uterus that they ventured to leave the uterus in two cases in which conditions are usually regarded as calling for hysterectomy.



Double circle suture.

The death of both women from peritonitis taught them that too much must not be expected of peritonization, but it is so simple, easy and useful that it should never be omitted.

**Subcutaneous Symphyseotomy in Argentina.**—Zarate's experience in thirty cases impels him to affirm that subcutaneous symphyseotomy is a simple and mild operation which permits spontaneous delivery and triumphs over dystocia from relatively contracted pelvis. Version and forceps are contraindicated with it and serve only to bring it into disrepute. The contracted pelvis of Argentine women, is almost always of the relatively contracted type. With an obstetric conjugate of 7.5 cm. as the limit, subcutaneous symphyseotomy will in time, he declares, reign supreme over the violent methods.

**The Bladder and Ureters with Uterine Cancer, etc.**—Mock and Doré discuss the important services liable to be rendered by cystoscopy and catheterization of the ureters with gynecologic disease, and especially with uterine cancer. The bulging of the bladder wall, displacement of the trigonum or other region, local pulsation, wrinkling, edema, etc., are signs of disease nearby and disturbance in the circulation. Retention catheters inserted in the ureters much facilitate the Ries and Schauta operations for uterine cancer and, if the ureter happens to be cut, render suture an easy matter. In their two cases of rectal cancer in men, not much information was derived from cystoscopy.

**Injury of the Ureter During Gynecologic Operations.**—Stajano comments on the difficulty of avoiding injury of the ureter at gynecologic operations as the ureter has no settled position but follows the caprices of the lesions developing in the pelvis. At the superior inlet there is danger of pinching or ligating the ureter in ligating the utero-ovarian vessels and in suturing the peritoneum. Tumors in and near the broad ligament should be carefully shelled out to leave the peritoneum intact and with it the ureter which may lie in front of the tumor. He warns further that after the uterine artery is severed, it usually retracts; in the search for it, the ureter may be seized by mistake and ligated for the bleeding artery. Still another danger is that the ureter may be included in the spiral suture with the Gersuny technic. This occurred in one case in his experience, the anuria from the mechanical obstacle keeping up for forty-eight hours after the suture had been removed.

## Journal de Radiologie, Paris

April, 1920, **4**, No. 4

*Radiography of the Skin. H. Béclère.—p. 145.
*Roentgen-Ray Treatment of Lymphadenoma. H. Bordier.—p. 150.
Radio-Active Treatment of Cancer of Cervix. S. Laborde.—p. 155.
Measurement of Electric Stimulation of Neuromuscular System. A. Strohl.—p. 161.

**Radiography of the Skin.**—Béclère's roentgenograms show with remarkable distinctness all the lines in the skin, like a finger print carried to the nth power. He has the skin rubbed with hydrous wool fat, and then bismuth carbonate is gently

rubbed into the skin for ten minutes, and the excess wiped off. The bones show up perfectly. This method renders it possible to take finger prints of the drowned.

**Roentgen-Ray Treatment of Lymphadenoma.**—Bordier reports two cases of lymphadenoma of the neck or chest in which the serious affection retrogressed completely under radiotherapy. The patients were men of 34 and 36.

## Schweizerische medizinische Wochenschrift, Basel

July 29, 1920, **50**, No. 31

*Iron in Anemia. Nägeli.—p. 661.
*Doses of Iron in Anemia. A. Alder.—p. 663.
Isolated Sprains of Humeroradial and Ulnaradial Joints and Their Relation to Epicondylitis. C. Kaufmann.—p. 665.
*Spinal Ganglions with Scleroderma. Martha Herzog.—p. 667.
Rubber Drains in Roentgenogram. Schinz and Preiss.—p. 674.
Anilin Dyes in Treatment of Anthrax. Baumann.—p. 676.

**Iron in Anemia.**—Nägeli's analysis of the literature on the action of iron on anemia and especially in chlorosis shows the conflicting opinions of different clinicians, but his own clinical experience indicates that iron in proper doses elicits in two or three days a stormy reaction in the bone marrow, which throws quantities of young elements into the blood. Not merely the hemoglobin molecules but the whole of the bone marrow seems to be whipped up. Everything points to a direct and intense stimulation of the marrow by the iron. He adds that in ten cases of anemia with gastric ulcer, no benefit was evident under iron until large doses were given, and then the hemoglobin ran up rapidly from 37 to 82 and then to 100 per cent., and the reds to 5,024,000.

**Proper Doses for Iron in Anemia, Chlorosis, etc.**—Alder writes from Nägeli's clinic to supplement the latter's article, summarized above, describing the technic and doses, insisting that it is only a question of the dose for a cure of even the most torpid cases. No mishaps have ever occurred under the large doses in the clinic, and they were not followed by constipation except where there was a constant tendency to this. In the severer cases, the iron was given in pills, each of 0.1 gm. of reduced iron, from three to ten pills being taken daily as needed. The improvement in the blood reaches its acme in three weeks and then keeps stationary thereafter. Only one refractory case was encountered, and this woman soon gave signs of pulmonary and laryngeal tuberculosis. In chlorosis, after taking 100 Blaud's pills in the course of twenty-three days, the hemoglobin averaged an increase of 29.4 per cent.

**Degeneration of Spinal Ganglions with Scleroderma.**—Herzog found cystic degeneration of the spinal ganglions and posterior roots with progressive scleroderma in a man of 61, but does not venture to define the connection between them. Marburg has described a similar case of disease of spinal ganglions with trophic changes in the skin.

## Pediatria, Naples

May 15, 1920, **28**, No. 10

*Acetone in Spinal Fluid in Tuberculous Meningitis. G. Genoese.—p. 449.
*Factors in Endocrine Derangement. O. Pentagna.—p. 455.
Splenopneumonia in Boy of Two. G. Salvetti.—p. 472.

**The Spinal Fluid in Tuberculous Meningitis.**—Genoese obtained an intense response to the Ricci and Fromm-er tests for acetone in the urine of 20 of 23 children with tuberculous meningitis, and a weak response in the 3 others. The spinal fluid gave a 3 plus response in 21 of the children; the 2 giving a negative response were in the small group giving a weak response in the urine.

**Pathogenesis of Endocrine Derangement.**—Pentagna found 115 cases of unmistakable endocrine malfunction among 20,000 children examined at the Naples children's clinic since 1914. In all but 23.4 per cent. of the cases, syphilis was certain or highly probable. The syphilis toxins may not induce direct syphilitic manifestations, but merely influence the embryonal development of the ductless glands. This explains the impotence of mercury, etc., in such cases.

## Brazil-Medico, Rio de Janeiro

June 12, 1920, **34**, No. 24

*Electronic Reflexes. E. Muniz de Aragão.—p. 367.
*Stain for Malaria Parasite. N. B. Gonçalves.—p. 374.

**Electronic Reflexes.**—Muniz discusses recent work on geomagnetism and the polarity of the body, and Abrams' research in particular, especially with electrodes which induce contraction in certain muscles when approaching a body of water. He cites further Regnault's recent experiments with well locaters who are able to detect the presence of a subterranean body of water. It has now been demonstrated, he states, that certain persons with exaggerated electronic reflexes respond with slight wrinkling of the skin in some regions when approaching a body of water.

**Stain for Malaria Parasite.**—Gonçalves advocates, as giving especially fine results, a reagent consisting of Manson's boraxed azure, methyl alcohol and glycerin, each 25 parts, with 2.5 parts acetone. Six drops of this are mixed with 5 c.c. of water and six drops of a solution of 0.5 parts eosin in 1,000 parts distilled water. A few drops of methyl alcohol are dropped on the thin layer of blood and the slide is left to dry upright. It is then covered with the stain. This is rinsed off thirty minutes later until the tint is frankly pink. The boraxed azure is prepared by dissolving 2 parts of methylene blue in 100 parts of a hot 5 per cent. solution of borax in distilled water. The reagents are best made up fresh.

## Gaceta Médica de México, México

April-July, 1920, 4, s., **1**, No. 6

Surgical Treatment of Chronic Otomastoiditis. P. Peredo.—p. 195.
Vaccine Therapy and Results. F. Paz.—p. 208.
Medical Folk-lore of Mexico. N. León.—p. 217.
Influenza in Public Hospital in 1918. R. Carrillo.—p. 226.
Surgery of the Wrist. G. M. Malda.—p. 237.
*Certain Causes of Constipation. R. Ortega.—p. 249.
Yeast from Pulque. M. Cordero.—p. 254.
*Obstruction of Common Bile Duct. M. Godoy Alvarez.—p. 258.
*Cinematographic Study of Development of Embryo. T. G. Perrín.—p. 266.
Should German Salvarsan Be Preferred? A. Brioso Vasconcelos.—p. 271.
*Recklinghausen's Disease in Mexico. F. Ocaranza.—p. 276.
*Scleropolycystic Ovaritis. Rosendo Amor.—p. 301.
Second Case of Goundou to be Published in Mexico. J. De J. Gonzalez.—p. 305.
Agglutination in Mexican Typhus. T. G. Perrín.—p. 309.
Lange's Colloidal Gold Test in Mexico. J. Arroyo.—p. 320.

**Causes of Constipation.**—In Ortega's first case the obstruction of several years' standing seemed to be from internal hemorrhoids. Ortega advised the man to refrain from straining at stool and to press with his hands on the region to compress the dilated superior hemorrhoidal veins. Rhythmic contraction of the anal sphincter repeated during the efforts at expulsion also aids in evacuating the rectum.

**Obstruction of Common Bile Duct.**—Godoy has noticed that colic seldom occurs during the development of malignant disease in the bile-duct region, while with gallstones there is usually a history of more or less frequent colics before the bile duct becomes totally obstructed. The pain early with cancer is more a dull ache, chronic rather than acute. The jaundice with gallstone obstruction varies; as it increases, the stools grow more clay-colored, and vice versa. With gallstone obstruction the gallbladder is usually small, retracted and painful, while with organic obstruction it is dilated as a rule, but is not painful. Godoy relates a number of typical cases to show the difficulty of differentiation in such cases, including one of a woman of 40 with jaundice, and pain in the bile-duct region but not of the nature of colics. The gallbladder was much distended and the stools were permanently clay-colored. The diagnosis of carcinoma, probably of the pancreas judging from the rapid development, all within three months, was confirmed by the laparotomy, the biliary apparatus being free from calculi.

**The Cinematography of Development of the Embryo.**—Perrín describes the reproduction in moving picture of the microscopic findings during and following fecundation of the ovum of a sea urchin, *Estrongilocentrotus lividus*. He exhibited the corresponding films, the work of Mlle. Chevroton of Paris, at a recent meeting of the Academia nacional de Medicina.

**Case of Recklinghausen's Disease.**—Ocaranza's patient has more than 800 of the characteristic tumors; one in the sacral region is 58 cm. in circumference. He is a man of 38 and crouches silent and immovable most of the time.

**Polycystic Ovaritis.**—Rosendo Amor emphasizes the rapid development of scleropolycystic ovaritis when it is of gonococcal origin, accentuated by the premature menopause which it frequently induces. Cystic degeneration of the ovaries with neuralgic pains of noninfectious origin is generally traceable to repeated pelvic congestions with the nervous-gouty diathesis. Removal of the ovaries does not always cure, while relief is often obtained with a simple laparotomy, ignipuncture of the ovary, stretching the anus, or section of the sacral sympathetic, confirming the nervous origin of the disturbances. Entirely different from this is the rapid course of the gonococcus cases, and no intervention here is of any use unless the whole organ is removed or panhysterectomy done.

## Policlinico, Rome

Aug. 2, 1920, **27**, No. 31

Deficiency Diseases. P. Ramoino.—p. 819.
Intensive Sodium Cacodylate Treatment of Nervous and Circulatory Disturbances. G. Roasenda.—p. 826.
Fatal Anthrax from Shaving Brush. G. Sampietro.—p. 830.

## Deutsche medizinische Wochenschrift, Berlin

June 24, 1920, **46**, No. 26

Epidemic (Lethargic) Encephalitis. A. Strümpell.—p. 705.
The Epidemic Appearance of Encephalitis. Hoestermann.—p. 707.
Albinism in Relation to Heredity. W. Jablonski.—. 708.
*Abderhalden's Test for Renal Tuberculosis. F. Wauschkuhn.—p. 711.
*Muscular Rigidity with Appendicitis. A. Krecke.—p. 712.
*Cervicovaginal Fistulas. K. Grasmann.—p. 713.
Salt Aids Flotation of Helminth Ova in Brine. Fülleborn.—p. 714.
Variations in Electric Mains and Roentgen-Ray Work. Schreus.—p. 715.
Late Fatal Effect of Skull Injury. Friedemann.—p. 716.
Rhinolaryngologic Hints for General Practitioners. Finder.—p. 717.

**Abderhalden's Test in the Diagnosis of Renal Tuberculosis.**—Wauschkuhn reports that the results with the test were disappointing. It was impossible to distinguish an acute or chronic nephritis from renal tuberculosis.

**Lack of Rigidity of Abdominal Wall in Destructive Appendicitis.**—Krecke recalls that the reflex abdominal rigidity which is the best sign for the recognition of a severe type of appendicitis, is occasionally lacking. In this case the appendix lies close to the posterior abdominal wall, behind the cecum.

**Cervicovaginal Fistulas.**—Grasmann found in his case of cervicovaginal fistula occurring in a primipara, aged 22, during an abortion at the fourth month, that the condition was due to the same causes as reported by Wiczynski; namely, extreme anteflexion, rigidity of the cervix, and an unyielding external os, with a tendency to hypoplasia.

## Jahrbuch für Kinderheilkunde, Berlín

1920, **92.** First half

*Disordered Heart Action in Children. K. Stolte.—p. 1.
*Pathology of Disturbance Due to Fat in Infant Feeding. G. Bessau.—p. 14.
*Flour in Infant Feeding. H. Aron.—p. 82.
*Edema in Spasmophilia. O. Bossert.—p. 121.
Familial Shortness and Slant of Spine. Harriehausen.—p. 143.
*Bacteriology of Infant Blood. Bossert and Leichtentritt.—p. 152.
*Active Immunization Against Diphtheria. H. Opitz.—p. 189.
*Fate of Children with Congenital Syphilis. R. Gralka.—p. 205.

**Disordered Heart Action in Children.**—Stolte remarks that atony as the cause of murmurs should be suspected in children unusually tall for their age, of a neuropathic tendency, especially when the murmur can be influenced without change of position by improving the vascular tonus. The disappearance of the murmur as the child grows stronger confirms that the defective closure of the valve was due to relaxation of the muscular ring. The functional tests of the heart by climbing stairs, etc., may be followed in children by an apparently normal response, even with severe valvular incompetency. An indistinct first sound at the apex is a sign of pathologic conditions; such children are usually slow in their movements and do not join in games, and they urinate very little during the day but large amounts at night, and are often subject to enuresis. When they lie down during the day, the amount of urine increases, as the circulation is thus relieved. The urine is normal otherwise. Spasm of the vessels may shut off the blood from the extremities; this may occur in an extreme form in infectious diseases. His experience has demonstrated that disturbance in the circulation need not be feared with pathologic conditions of the heart, congenital or acquired, so long as the second pulmonary flapping sound grows less distinct after exertion. Adults do not have the child's possibilities for compensation, and the sound becomes accentuated in them after exertion. Lively children may be in almost perpetual motion and the heart grows stronger all the time, while children inclined to be lazy, who do not get much exercise but are addicted to masturbation, may acquire hypertrophy of the heart with pounding apex beat, displaced more or less to the left. He reports typical cases of the kind in two masturbating twin brothers of 5. They complained of the shaking of the chest wall, and the mother had already noticed it. Supervision of the children and diversion of their attention brought both subjective and objective improvement. Treatment of hypertrophy of this origin and from chronic nephritis is by exercise to actual fatigue. By this means the peripheral or renal vascular resistance is overcome. The possibilities for compensation are so great in children that with perfectly compensated organic valvular defect, responding to functional tests in the same way as with extracardial heart-lung murmurs and accidental murmurs due merely to reduced tonicity, this can encourage us to allow the child progressively increased demands on its heart. The heart will grow stronger under it.

**Pathology of Disturbance from Fat in Infant Feeding.**—In this first communication on this subject, Bessau discusses the clinical aspect of the *Milchnährschaden*, and emphasizes that the light color of the stools is the only symptom by which the clinician can recognize the condition. The decoloration of the bile pigment is the clinical indicator of it, and the process which accomplishes this is probably the cause of the clinical disturbances. Everything tends to incriminate both fat and protein as the causes, while, on the other hand, promotion of fermentation processes in the intestines is effectual treatment for it. Breast-fed children may develop "white dyspepsia," but this is not due to decoloration of bile pigment, as in the fat dyspepsia. The latter is cured at once by changing the child from cow's to breast milk; there may still be disturbances of various kinds, but not of *Milchnährschaden* type.

**Flours in Infant Feeding.**—Aron calls attention to the way the infants thrived during the war on flour containing a large proportion of bran. It was first made into bread dough and baked in thin sheets, and then pulverized. The low carbohydrate content of the flour thus prepared and hence its low fermentability, on the one hand, and, on the other, its high content in extractives which stimulate metabolism and peristalsis, have solved, he declares, the problem of flour in infant feeding.

**Edema in Infants with Spasmophilia.**—Bossert's research on the metabolism confirmed his clinical findings that children with severe spasmophilia but sound heart and kidneys are liable to respond with edema and sometimes with carpopedal spasm when fed with egg-flour gruel with no more salt than the percentage in breast milk. No edema develops when the children are getting a mixed diet at home. Nitrogen and minerals are retained, but when the egg is dropped and abundance of water given, they are eliminated. He theorizes to explain this, adding that the edema is not doughy but rather taut.

**Bacteriologic Examination of Blood in Infants.**—This communication reports the results of puncture of the longitudinal sinus in 250 cases to obtain blood for bacteriologic examination. Bacteria were found in forty-four cases and all but three in this group terminated fatally. Nearly all of the various kinds of bacteria isolated are capable of inducing the clinical picture of alimentary intoxication, and only examination of the blood will differentiate the etiology.

**Immunization Against Diphtheria.**—Opitz reports that he was able with dilutions of pure diphtheria toxin, injected intradermally, to induce active immunization against diphtheria as effectually as with Behring's toxin-antitoxin vaccine. The detailed findings are tabulated.

**The Fate of Children with Congenital Syphilis.**—Gralka relates that the experience at Breslau with 410 children with congenital syphilis shows that under combined arsphenamin and mercury treatment much better results are attained than with mercury alone, and that breast feeding is not unconditionally necessary to save the child's life. The unmistakable manifestations generally develop during the second month. When treatment is inadequate, a positive Wassermann reaction may be obtained fifteen or twenty years later. In conclusion he emphasizes the extreme importance of keeping these children under constant supervision, or at least to ensure that they return for further treatment at the first sign of flaring up of symptoms. Eight pages of close-set literature on the fate of syphilitic children are appended.

## Münchener medizinische Wochenschrift, Munich

June 25, 1920, **67**, No. 26

*Postmortem Pigmentation of the Skin. K. Neubürger.—p. 741.
*Observations on a Cecal Fistula. H. Beuttenmüller.—p. 743.
*Insufficiency of the Ileocecal Valve. B. Hannes.—p. 745.
*Placenta Praevia Isthmica-Cervicalis. E. Vogt.—p. 746.
"Thermolabile" Precipitation in the Sachs-Georgi Reaction. T. Baumgärtel.—p. 747.
*Demonstration of Hemin Crystals. Strassmann.—p. 748.
Quick Cure of Chancroid with Zinc Chlorid. Mergelsberg.—p. 749.
*Visual Disturbance After Hot Baths. M. Müller.—p. 751.
Shepherd's Purse as a Drug. L. Kroeber.—p. 752.
*Crystal Filters in Roentgen-Ray Work. G. Loose.—p. 752.
About Needles, Threads, Ligatures and Sutures. H. Hans.—p. 753.
Successful Treatment of Polycythemia by Roentgen Ray and Blood Transfusion. W. Förster.—p. 754.
*Diagnosis of Chronic Bartholinitis. O. Feis.—p. 755.

**Postmortem Pigmentation of the Skin.**—Neubürger states that incubation of the skin of cadavers at a temperature of 56 C. usually causes after from one to three days a dark discoloration to appear. The pigmentation does not seem to be affected by the disease of the deceased, except that in Addison's disease the pigmentation is more pronounced.

**Studies on Small Intestine Through a Cecal Fistula.**—Beuttenmüller reports her observations on a patient with a cecal anus: The intestinal mucosa is not sensitive and only occasionally traction on the mesentery causes pain. Even contractions of the intestine produced by faradic stimulation are not painful. Mixed, bland food remains in the small intestine from two to three hours; if exceptionally dry, from four to five hours; if more or less fluid, from one and a half to three hours. Corroborating roentgen-ray findings, the contrast test meal reaches the end of the small intestine in from two to three hours, where it remains over four hours, until the beginning of defecation. This fact shows how cautious we must be in judging the time of passage of a contrast meal through the gastro-intestinal tract. Of the various cathartics, Glauber's salt, Epsom salt and a Carlsbad salt mixture acted most promptly; next to these came phenolphthalein. Astringents affect the small intestine like dry food; ingestion of more fluid food reduces the astringent effect. In this particular case, astringents and laxatives affected the small and the large intestine alike. Bilirubin appears in the stool only after the ingestion of salines. Immediately after the passage of the ileocecal valve, hydrobilirubin appears; or, on account of pathologic conditions, the reduction of pigment begins in the small intestine. Reaction of the fistular feces is always alkaline. The odor of the feces is not feculent, but when ascitic fluid is added to the feces, large quantities of putrefaction bacteria develop. The consistency of the feces depends on the nature of the food, as in feces passing through the natural outlet. The dry residuum of the fistular feces coincides very closely with that of normal feces. After the passage of the ileocecal valve, inspissation of the feces begins. The microscope shows few muscle fibers and large numbers of micro-organisms, the colon bacillus becoming supplanted by large gram-positive bacilli and cocci. Digestion of starch is begun in the small intestine and continued in the large intestine (the frequently positive fermentation test probably indicates pathologic processes in the small intestine). Traces of albumin are present, while peptones are not demonstrable. The presence of sugar could not be shown. Of the ferments, traces of amylase are present, but trypsin is not noted.

**Experimental Research on Insufficiency of the Ileocecal Valve.**—Hannes found from experiments on cats and dogs that the ileocecal valve is open in animals when the stomach is empty, and closed after they have been eating. One experiment went to show that psychic motility was sufficient to close promptly the valve that had been open during a state of fasting; for in the dog that had fasted two days 200 c.c. of tap-water (37 C.) injected rectally were ejected at once from an ileac fistula, but, after 200 c.c. of bouillon had been ingested by mouth, which in a few minutes was ejected from a duodenal fistula, and then 200 c.c. of water were injected rectally a second time, no fluid came out of the ileac fistula. It is therefore evident that the closure of the ileocecal valve is not due merely to the mechanical filling of the small intestine but rather to the psychic motility aroused by eating. A definite analogy is thus established between the pylorus, which prevents the bile from entering the stomach from the small intestine, and the ileocecal valve, which prevents the contents of the large intestine reentering the small intestine. As regards roentgen-ray technic, a practical conclusion would be that, before injecting rectally a contrast fluid, psychic motility should be stimulated by prescribing some appetizing drink.

**Placenta Praevia.**—Vogt states that heretofore only twenty-three cases of placenta praevia isthmica-cervicalis have been reported in the literature. He adds ten of his own cases that occurred between 1908 and 1919—an unusually large number—out of 179 cases of placenta praevia. The chief symptom in placenta praevia isthmica-cervicalis is the hemorrhage, which may occur at any time during pregnancy, although in his ten cases it happened always during the second half; twice at term. The severity of the hemorrhage differs widely and offers nothing characteristic. Sometimes hemorrhages occurred at irregular intervals; then again the first hemorrhage might be so severe as to render immediate medical assistance necessary. He thinks that abdominal, cervical cesarean section is indicated in the case of every severe hemorrhage, provided the child is viable and no severe infection is present. The advantages of the cervical operation are discussed. Vogt operated in all ten of his cases, and both mother and child were saved in each instance.

**Demonstration of Hemin Crystals.**—Strassmann describes a modification of the Teichmann test for the demonstration of hemin crystals in blood. Particles from the suspected blood stain are mixed on a glass slide with a few drops of a mixture composed of 1 part of a 5 per cent. sodium chlorid solution and either 3 or 10 parts of concentrated glacial acetic acid, and covered with a cover-glass. The acid is evaporated in the usual manner over the flame. This mixture may be preserved, ready for use, for some time.

**Visual Disturbances Following Hot Baths.**—Müller reports two cases of serious disturbance of vision during or following hot baths. He assumes an intracranial hemorrhage as the cause. The patients were women aged 65 and 84. In the one case the patient asked to have the electric heat turned off as she could not see. According to her statement, she was completely blind for a time but vision gradually returned the following day.

**Crystal Filters in Roentgen-Ray Work.**—Loose no longer uses the ordinary metal filters, aluminum, copper, zinc, etc., in his roentgen-ray work, but employs instead so-called crystal filters, which are plates composed of layers of crystals of metallic salts. The advantages of this method appear to lie in a sort of purifying effect that the crystals exert on the roentgen rays; in any event, since he has been using them, the biologic effect of irradiation has been uniformly good and no damages to the skin have resulted. Most patients show no outward evidence of having ever received roentgen-ray treatment; only exceptionally does a slight pigmentation appear.

**Diagnosis of Chronic Bartholinitis.**—Feis finds that frequently attempts to secure a specimen of the secretion of the vulvovaginal gland for diagnostic purposes are unsuccessful, in which case he recommends the use of a sound to secure a specimen. It is well to roughen the head of the sound so that the secretion may adhere to it better. In 31 cases of subacute

and chronic gonorrhea treated during the previous six months he was unable to secure any secretion from the gland by expression. He succeeded, however, in passing a very fine sound in 22 of the cases. In 9 a sound could not be introduced. Examination of the sparse secretion adherent to the sound gave the following result: in 4 cases the findings were negative; in 11 cases gonococci were found; in 7 cases the secretion was free from gonococci, but a more or less pathologic condition existed, as evidenced by accumulation of leukocytes and desquamation of the epithelium. In treating gonorrheal infection of the vulvovaginal gland Feis tried first protargol and formaldehyd, but finds a 0.5 per cent. solution of silver nitrate more efficacious, daily injections being made. Within four to six weeks he succeeds in securing a gonococcus-free smear from the excretory duct. Also the leukocytes disappear or are reduced.

## Therapeutische Halbmonatshefte, Berlin

May 15, 1920, **34**, No. 10

Prophylactic and Therapeutic Use of Bacterial Vaccines. H. Langer.—p. 277. Conc'n.
Surgical Treatment of Colitis. H. Klose.—p. 281.
Treatment of Migraine. Grober.—p. 287.

## Wiener klinische Wochenschrift, Vienna

June 24, 1920, **33**, No. 26

Acute Leukemia. C. Sternberg.—p. 553.
So-Called Psychogenous and Physiogenous Neuroses. J. Gerstmann.—p. 557.
*Dosage in Recent Syphilis. A. Brandweiner.—p. 558. Conc'n in No. 28, p. 608.
Polyuria with Epidemic Encephalitis. E. Hoke.—p. 652.
The Sachs-Georgi Flocculation Reaction. L. Kumer.—p. 562.

July 8, 1920, **33**, No. 28

Arrhythmic Pulse and Extrasystole. Kaufmann and Rothberger.—p. 599.
Tetany of Bladder and Its Treatment. Schwarz and Wagner.—p. 604.
Cowslip Root as an Expectorant. R. Joachimowitz.—p. 606.

**Dosage in Treatment of Recent Syphilis.**—During the war Brandweiner was connected with the largest Austrian hospital for venereal diseases. He recalls that arsphenamin accidents occur more frequently at the beginning of treatment, and admits that in a certain number of cases—not very large—we may doubtless overtreat the patient, but believes that this disadvantage is outweighed by the advantage derived by giving really adequate treatment in other cases. He urges that while adopting a mode of treatment that will give the best therapeutic results, we must also give most careful attention to the manner in which each individual patient reacts to the remedies administered; that is, the treatment must in one sense be generalized and made effective, but in another sense it must be individualized to conform to the varying needs of patients. A case which shows the slightest evidence of a positive Wassermann reaction cannot be regarded as a purely primary case; to be regarded as primary, a case must show an absolutely negative reaction both before and directly after the first injection of arsphenamin.

## Zentralblatt für Chirurgie, Leipzig

June 19, 1920, **47**, No. 25

Operative Treatment of Old Empyema Cavities. P. Graf.—p. 610.
Biochemical Reactions with Carcinoma. W. Budde.—p. 611.
*The Management of Perforated Gastric Ulcer. W. Burk.—p. 614.
"Extraperitoneal Incision for Abdominal Nephrectomy." Stutzin.—p. 615.
*Use of Traction Sutures in Prostatectomy. Zuckerkandl.—p. 616.
*Repair of Large Clavicle Defect. E. Unger.—p. 617.
*A Case of Vaginal Calculus. V. Winckler.—p. 617.

**The Management of Perforated Gastric Ulcer.**—Burk describes the method that he has employed of late in dealing with perforated gastric ulcer. Two anchor sutures are placed on opposite sides beyond the infiltrated wall of the ulcer. The threads, which are left long, are drawn out through the abdominal rectus and tied over pads of gauze. By this means the surface of the ulcer is pressed tightly against the abdominal wall and the parietal peritoneum thus sealing the open ulcer surface. For safety's sake a drain is inserted. The sutures are removed the tenth day.

**Traction Sutures in Prostatectomy.**—In operations on the prostate, Zuckerkandl has of late used traction sutures as recommended by Hartert and by Claessen, and he regards their use as a great improvement in technic. For example, through the body of the prostate adenoma either a single suture is placed medially or two sutures may be used, one on either side, and enucleation is performed while traction is exerted on the suture threads. In the case of large tumors of the prostate it is sometimes necessary to place the sutures at deep points. He has found traction sutures valuable also in operations on deep-seated cancer of the bladder, in which case a series of sutures may be placed in the margin of the tumor.

**Repair of Large Clavicle Defect.**—Unger reports a case in which, the distal half of the clavicle having been shot away, the remnant of the clavicle and the coracoid process were joined with two wire sutures, and a good function of the shoulder joint was secured. The height of the shoulder is normal. Between the scapula and the clavicle a large callus has developed. The patient can raise his arm about 45 degrees above the horizontal. Rotation movements are entirely normal.

**Calculus in Vagina.**—Winckler reports a case in which a girl of 13 had suffered from nocturnal enuresis since her second year. Examination revealed a yellowish white, rough body protruding from the hymen, and a wedge-shaped calculus weighing 4 gm. was brought to light. It contained no foreign body. Its pathogenesis seems to have been connected with the enuresis. Decomposition of urine entering the vagina through the central opening in the hymen doubtless caused the formation of the stone, in much the same manner as catarrh of the urinary bladder may lead to production of calculi. After the removal of the stone, there was no further nocturnal enuresis. In every instance of enuresis careful search for the cause should be made, and we should not be satisfied with merely giving general advice on the subject.

## Zentralblatt für Gynäkologie, Leipzig

June 12, 1920, **44**, No. 24

*The Freund-Wertheim Carcinoma Operation. A. Mayer.—p. 617.
*Puerperal Fever. C. Neis.—p. 622.
*Laceration of Intestine by External Trauma. H. Schaedel.—p. 624.
*Intestinal Obstruction by Pelvic Exudate. F. R. Brewitt.—p. 627.
Traumatic Hematoma of the Vulva. F. Jacobi.—p. 630.

**The Freund-Wertheim Carcinoma Operation.** — Mayer reports the experience of the Tübingen Universitäts-Frauenklinik during the fifteen years ending with 1916 with the Freund-Wertheim operation. Of the 893 cases of carcinoma of the uterus that were observed during this period, 81.2 per cent., were carcinoma beginning in the cervix, while 18.8 per cent., were in the body of the uterus. Of the 725 cases of carcinoma of the cervix, 34.7 per cent., were inoperable. The inoperability had its basis almost without exception in the local spread of the disease. If operation is attempted in the inoperable cases, death is the inevitable result. Radiotherapy does not seem to offer much hope in such far advanced cases; in fact, it would seem at times as if the rays acted as an irritant and hastened the end. Of the 474 operable cervix cases 457 were operated on; the operative mortality was 20.3 per cent. Of the 343 patients operated on before 1913, 68 died, and of the 275 that survived the operation there were recurrences in at most 165 cases; 107 patients (39.3 per cent.) had been free from recurrence for at least five years, others longer. In carcinoma of the body of the uterus (130 cases) the primary mortality was much lower (9.6 per cent.), and the percentage of permanent cures was higher (62.2 per cent.), so that here the need for a different method of treatment is not as great as in the case of carcinoma of the cervix.

**Puerperal Fever.**—Neis reports a case of puerperal fever from which he concludes that if a case seems of obscure origin it is well to consider the possibility of endogenous infection. Bacteriologic examination of the blood for both aerobic and anaerobic organisms should be made. At the same time a smear from the cavity of the uterus should be developed.

**Laceration of Intestine by External Trauma at End of Pregnancy.**—The young woman fell on the edge of a pitcher

but the pains and vomiting which developed an hour later were ascribed to labor, as two days later she was delivered at full term. Colic and borborygmus persisted whenever she drank anything, and after eating mashed potatoes and meat croquettes the twentieth day after the accident, symptoms of ileus developed with fecal vomiting, but expectant treatment was continued, with fluid food, for several weeks until a tumor was palpated in the right upper abdomen. Laparotomy revealed a perforated laceration of the intestine which had ulcerated and closed the perforation, and was well on the way to healing. Prompt recovery followed resection of a 35 cm. loop. In case of laceration of the intestine, when operation is impossible, Schaedel thinks it might be advisable to belt in the abdomen and give opium, hoping for a spontaneous healing. In this case the full abdomen had helped to immobilize the injured loop.

**Postoperative Intestinal Obstruction.**—Brewitt reports four cases of intestinal obstruction resulting from compression by exudates in the true pelvis arising after gynecologic intervention. He says that antiphlogistic measures, such as hot-air baths, compresses and packs, proved useless, and that it is poor surgery in such cases to perform a laparotomy in order to search for adherent intestinal loops in Douglas' pouch. It is an unnecessarily serious operation for the patients, who are usually in a much weakened condition. He recommends as the operation of choice a temporary, lateral fistula in the descending colon, which operation can be performed under local anesthesia. The operation is described in detail. The patients begin to improve at once. In from ten to twelve days the severe symptoms disappear as the exudate is absorbed, and the fistula can be allowed to close, which it will do spontaneously.

## Zentralblatt für innere Medizin, Leipzig

July 10, 1920, **41**, No. 28

Soot Deposits in Skin of Chimney-Sweeps. Pichler.—p. 489.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

July 24, 1920, **2**, No. 4

Horizontal Rod Piercing the Penis Worn by Certain East Indian Tribes. J. Kleiweg de Zwaan.—p. 289.
*Osteomyelitis of Upper Jaw in Infants. E. Marx.—p. 294.
*Case of Banti's Disease with Death Under Neo-Arsphenamin. B. K. Boom.—p. 304.
Keratitis in W Form. G. Wisselink.—p. 312.

**Ocular Lesions Consecutive to Osteomyelitis of the Upper Jaw in Infants.**—Marx has encountered three cases and compiles thirty-three from the literature in which this was followed by an abscess or fistula or merely inflammation in the conjunctiva of the same side, in infants from 3 days to 9 months old. He found staphylococci in two of his cases but this may have been a secondary invasion. In one case cited, both staphylococci and streptococci were cultivated from the mother and also from her child. About 25 per cent. of the cases terminated fatally, but the prognosis is favorable if the osteomyelitic process in the bone is discovered and treated properly in time. The antrum is so small at this age that we can scarcely speak of a sinusitis, the lesions being an actual osteomyelitis, and it spreads in the spongiosa to the eye. In eight of the total thirty-five cases the disturbances in the eye were the first thing that attracted attention to the osteomyelitis. In nearly 25 per cent. of the cases, exophthalmos was pronounced, and this seems to occur constantly with inflammatory processes in the ethmoid sinus. Two cases of the latter in infants have been published, and both children recovered after the pus had been cleared out of the sinus. In Stephenson's recent compilation of ten cases of ethmoid sinusitis with exophthalmos, one was in a 2 weeks babe.

**Neo-Arsphenamin in Banti's Disease.**—The girl of 11 had an extremely large spleen, secondary anemia, leukopeny with preponderance of mononuclear cells, chronic diarrhea, and unstable pulse and temperature. By exclusion, Banti's disease was diagnosed, but splenectomy was postponed for tentative treatment with neo-arsphenamin, 0.015 gm. by the vein once a week for six weeks. Then jaundice developed, with a hemorrhagic diathesis and high fever, and necropsy disclosed fatty degeneration and necrosis of the liver. The Wassermann reaction had been constantly negative. Boom attributes the fatality to the drug, the liver being in such a precarious condition that it could not stand even these small amounts of the comparatively harmless neo-arsphenamin. The case warns to be wary with arsphenamin treatment with a substandard liver, but unfortunately, he adds, we have no means of ascertaining this beforehand. The retrospective diagnosis was disease of the liver from inherited syphilis which had finally assumed the picture of Banti's disease. At necropsy in cases of Banti's disease, search should be made for syphilitic lesions.

## Hospitalstidende, Copenhagen

July 28, 1920, **63**, No. 30

*Operations for Scarlatinal Otitis. S. T. Sørensen.—p. 457.

**Operative Treatment of Otitis with Scarlet Fever.**—Sørensen emphasizes the difference in the general condition and resisting powers in or convalescing from scarlet fever when it is a question of operative intervention, compared with conditions when a chronic otitis is inducing cerebral or pyemic symptoms. His experience has further confirmed the evil results liable to follow an extensive mastoid or other operation for scarlatinal otitis and its complications. On the other hand, he has a record of fifty-seven cases of suppurative processes of scarlatinal otitis origin in which the periauricular abscess healed after simple incision, with recovery of all the patients. He describes three cases in which the mastoid operation seemed to have turned the scale to a fatal outcome; in one of these, severe uremia complicated the clinical picture but the condition was not hopeless until acute exacerbation followed the mastoid operation; in another case necropsy revealed diffuse tuberculosis, so the outcome would have been death in any event, but the child might have been spared the operations on mastoid, sinus, ligation of vein, etc. In three other cases the child recovered after a series of operations; the course seemed to be much aggravated by them as the scarlatina in each instance had been mild. Another argument against extensive operations is the difficulty of the differential diagnosis; in one case an abscess in the brain escaped detection even at the operation, and in two other cases with cerebral symptoms leading to assumption of otitic complications, the ear had not been affected by the scarlet fever, and the disturbances were traced to erysipelas spreading from the nose. At necropsy of patients with severe otitis he has sometimes found the mastoid cells full of purulent masses when during life there had been no signs of secondary otitic symptoms. To operate before symptoms develop would lead to many unnecessary operations, and to fatalities in the scarlatinal cases.

## Ugeskrift for Læger, Copenhagen

Aug. 5, 1920, **82**, No. 32

Physical Bases for Radiotherapy. S. Nordentoft.—p. 999.
Influenza at Sundholm, 1920. O. Studtgarth.—p. 1016.
*Treatment of Gastroptosis. C. J. Baastrup.—p. 1019.

**Combined Treatment of Gastroptosis.**—Baastrup suspects gastroptosis in women with long flat trunks, the upper abdomen curving in and the lower somewhat prominent, thin, nervous, complaining of dull headache, constipation, very frequent micturition, etc. In a case of the kind he found the lower level of the stomach at the symphysis, and the condition had not been improved by repeated courses of bed rest and forced feeding and other measures during seven years under various specialists. He applied massage to the arms, legs and back, and gave arsenic, and had the foot of the bed raised to aid in restoring the stomach to place. The result was surprising; the woman gained rapidly in weight and was fitted with a belt to support the stomach. All the symptoms disappeared for over three years. Then came recurrence of some of the symptoms, but they subsided anew under a two weeks' course of massage without confinement to bed, but the foot of the bed was raised at night. In a second case, bed rest for three or four weeks with the same measures was supplemented with out of door exercise and a special corset which includes the features of Lane's belt. The young woman was soon in perfect health and has had no disturbances since.